Canadian Journal of PUBLIC HEALTH

The National Journal of Preventive Medicine

UNIVERSITY OF MICHIGAN
APR 2 9 1958
PUBLIC HEALTH LIBRARY

Canadian Public Health Association

FORTY-SIXTH ANNUAL MEETING

•

BRITISH COLUMBIA BRANCH

•

WESTERN BRANCH
AMERICAN PUBLIC HEALTH ASSOCIATION

•

Hotel Vancouver
VANCOUVER, BRITISH COLUMBIA

MAY 20, 21, 22, 1958

See page 166

Volume 49 APRIL, 1958 Number 4

SCHOOL OF HYGIENE

UNIVERSITY OF TORONTO

Postgraduate Training for Physicians, Veterinarians, Dentists, and other University Graduates

DIPLOMA AND CERTIFICATE COURSES

Diploma in Public Health (D.P.H.)
Diploma in Industrial Hygiene (D.I.H.)
Diploma in Veterinary Public Health (D.V.P.H.)
Diploma in Dental Public Health (D.D.P.H.)
Diploma in Hospital Administration (Dip.H.A.)
Diploma in Bacteriology (Dip. Bact.)
Certificate in Public Health (C.P.H.)

COURSES FOR PHYSICIANS

Physicians may enrol in the following courses: D.P.H., D.I.H., Dip.H.A., Dip. Bact.

The *Diploma in Public Health* course provides the basic academic instruction needed for physicians entering the field of Public Health as Medical Officers of Health, or as physicians working full-time or part-time in specialized branches such as infectious diseases, tuberculosis, epidemiology, bacteriology, medical administration, health insurance.

The *Diploma in Industrial Hygiene* course provides the basic academic instruction needed for physicians entering the field of occupational medicine, especially industrial health, either as full-time or part-time medical officers in plants or industrial organizations. It is not now necessary for candidates entering this course to have first taken the D.P.H. course.

The *Diploma in Hospital Administration* course provides instruction for physicians and other university graduates taking up careers as hospital administrators.

The *Diploma in Bacteriology* course provides basic academic instruction in the following branches of medical microbiology: systematic and applied bacteriology and virology, public health bacteriology, mycology, parasitology; a course in statistical methods forms part of the curriculum.

A year of attendance, provided a diploma is obtained, satisfies part of the requirements for the Certification or Fellowship programs of the Royal College of Physicians and Surgeons of Canada in the approved medical specialties.

COURSES FOR VETERINARIANS AND DENTISTS

Veterinarians may enrol in the Diploma in Veterinary Public Health and the Diploma in Bacteriology courses.

Dentists may enrol in the Diploma in Dental Public Health and the Diploma in Bacteriology courses. These courses provide suitable training for those intending to enter public service, or to take up careers in teaching or research.

COURSES FOR OTHER UNIVERSITY GRADUATES

Graduates with degrees in arts or science may enrol in the Dip.H.A., Dip. Bact. or C.P.H. courses. The C.P.H. may be taken as a general course in public health administration, or as a course providing specialized training in nutrition, sanitation, bacteriology, or public health education.

DURATION OF COURSES

All courses are of 32 weeks' duration except the Dip.H.A. course which extends over two years, the second year being spent as a resident in hospital administration. Courses commence in early September of each year.

BURSARY ASSISTANCE AND FELLOWSHIPS

Bursary assistance may be available to candidates approved by Provincial Departments of Health. Overseas candidates should consult their government about Fellowships.

FOR FURTHER INFORMATION write to: Dr. A. J. Rhodes,
Director, School of Hygiene, University of Toronto, Toronto 5, Ontario.

respectfully we submit . . .

A COMPLETE ANALYSIS OF HEINZ NEW *MEAT DINNERS

* *Available in both Strained and Junior Lines*

STRAINED MEAT DINNERS
BEEF WITH VEGETABLES

PROXIMATE COMPOSITION						
CALORIES	TOTAL SOLID g.	PROTEIN g.	FAT g.	ASH g.	TOTAL CARBO-HYDRATE g.	CRUDE FIBRE g.
111	21.4	6.8	3.2	1.0	5.8	1.1

MINERALS				
CALCIUM mg.	PHOSPHORUS mg.	IRON mg.	COPPER mg.	SODIUM CHLORIDE g.
11.0	86	1.3	0.03	0.91

VITAMINS					
A I.U.	B THIAMINE	B2 RIBOFLAVIN	NIACIN mg.	C ASCORBIC ACID	CALORIES PER OUNCE
1070	13	65	1.27	2.0	31

The new Heinz Meat Dinners are also available in Chicken, Lamb, Veal and Ham and we would be delighted to furnish you with a detailed analysis of all varieties. Goes without saying that Heinz always welcomes requests from the medical profession for clinical samples. Drop a line to Heinz Baby Foods, Leamington, Ontario. Your request will receive prompt attention.

57

BFM-457A

HEINZ MEAT DINNERS

Canadian Journal of
PUBLIC HEALTH

VOLUME 49 APRIL 1958 NUMBER 4

CONTENTS

ARTICLES:

An Outbreak of Tuberculosis in a Public School 135
V. K. Rideout, M.D., D.P.H.

Agglutination Tests on Leptospirosis in Cattle 142
Paul Boulanger, D.V.M., M.Sc.

Techniques of Payment to Hospitals 148
B. H. Haaland and C. M. MacKay

Pollution of Waters by Industrial Wastes 154
A. V. Delaporte, B.A.Sc., Chem.E., F.C.I.C., P.Eng.

Endothrix Ringworm Endemic in Rural Eastern Quebec 157
F. Blank, D.Sc.

EDITORIAL SECTION:

New Hospital Construction 160

World Health Organization—Tenth Anniversary 161

SPECIAL ARTICLES:

What Do We Want in Health Education in Canada? A Panel Discussion 162
Jules Gilbert, M.D., Moderator

The Contribution of the Home Economist to Public Health 164
Eleanor Blackie

CANADIAN PUBLIC HEALTH ASSOCIATION:

Forty-sixth Annual Meeting in conjunction with the British Columbia Branch and the Western Branch, American Public Health Association, Vancouver, May 20–22, 1958: Program of Annual Meeting 166

DEPARTMENTS:

News Notes 175
Books and Reports 179

The Canadian Journal of Public Health is published monthly by the Canadian Public Health Association. Editorial and business offices, 150 College Street, Toronto 5, Ontario. Subscription in Canada $3.00 a year, payable in advance. Single copies 50 cents. Effective June 1, 1958, the subscription rate outside Canada will be $5.00 a year. Authorized as second-class mail, Post Office Department, Ottawa.

Contents may be reproduced only with the permission of the Editorial Board.

Canadian Journal of
PUBLIC HEALTH

VOLUME 49 TORONTO, APRIL 1958 NUMBER 4

An Outbreak of Tuberculosis in a Public School[1]

V. K. RIDEOUT,[2] M.D., D.P.H.

DURING the period from February 1954, to July 1956, a total of fourteen active cases of tuberculosis were discovered in the schools of Digby, N.S. There were three schools involved in this outbreak, the regional high school, the elementary school and a parochial school. Nine cases occurred in the high school, three in the elementary school and two in the parochial school. Six of these cases were resident in Digby town and the remaining eight lived in the surrounding municipality.

The town of Digby is situated in the western part of Nova Scotia on the Bay of Fundy, almost directly across from the city of Saint John, N.B. The population is about 2,200. The town is the center of a moderately large rural area and the regional high school serves both the town and part of the rural municipality. The economy of the area is based largely on fishing but there are several small industries as well. The C.P.R. steamer to Saint John, N.B., docks in Digby as its Nova Scotia terminus and the work provided by this service is a large factor in community prosperity.

The tuberculosis rate in this area of the province is not notably high and showed no increase among the general population at the time of the school outbreak.

Case 1. This case was discovered at the Children's Hospital in Halifax in a 13-year-old boy (N.M.), a student in Grade 8 at the high school. The patient had developed an acute febrile illness in mid-December 1953, with anorexia, loss of weight and cough. He failed to respond to treatment at home and was referred to the Children's Hospital on February 3, 1954 for investigation. This boy had been X-rayed on the mobile chest X-ray unit in November 1953, during a routine survey of the schools

[1]Presented at the seventh annual meeting, Atlantic Branch, Canadian Public Health Association, Kentville, N.S., November 6–8, 1957.

[2]Divisional Medical Health Officer, Department of Public Health, Yarmouth, N.S.

and this film showed no abnormality. On admission to the Children's Hospital, he was found to have a strongly positive tuberculin patch test and chest X-ray on February 7 revealed left mediastinal enlargement and an infiltration in the left upper lobe. A provisional diagnosis of pulmonary tuberculosis was made and the case was referred to the divisional office of the Department of Public Health. The patient was admitted on February 24, 1954 to the Tuberculosis Section of Roseway Hospital in Shelburne, N.S. for further investigation and treatment. On admission the boy had developed a miliary spread of his disease and a paralysis of the left vocal cord. This latter complication was attributed to compression of the recurrent laryngeal nerve by enlarged mediastinal glands and cleared fairly rapidly after therapy was instituted. A few weeks after admission he also developed a right sided pleurisy with effusion which also resolved uneventfully with aspirations and antimicrobial therapy. A positive sputum was never obtained from this patient. Gastric washings were also negative for tubercle. The patient received 18½ months of combined antimicrobials in hospital with excellent recovery. He was discharged home on September 4, 1955 with his disease classified as inactive. He returned to school after discharge and since then has been leading a normal life. Recent recheck X-ray was quite satisfactory.

This boy's family and known contacts were investigated, but no evidence of tuberculosis was found among them. His two siblings had, and still have, a negative reaction to the tuberculin patch test.

Case 2. This case (M.H.) was discovered in March 1954 in a 15-year-old girl. This child developed chest pains in February and later became quite ill. She developed a left side pleurisy with effusion, and was also found to have a positive patch test. She was referred to the district medical health officer by her family doctor and the diagnosis was confirmed by X-ray and aspiration. She was placed on bed rest at home and the effusion subsided for a time, but a recurrence occurred in July and she was admitted to Roseway Hospital on August 27, 1954. She received medical treatment, with aspirations as necessary, combined with antimicrobials. She made a good recovery and was discharged on May 15, 1955, returning to school that same autumn. This girl stated that she had no direct contact with any of the other children who subsequently developed tuberculosis, nor with the previously diagnosed case. Her family history is entirely negative and seven siblings all have negative patch tests. This girl lived in a rural area so would have had little occasion to mingle with the other students after school hours. A definite source of her infection has not been found. Her present condition is satisfactory.

Outside Contacts

In April 1954, a case of far advanced, open pulmonary tuberculosis with multiple cavitation was discovered in a 20-year-old man (A.S.) who was a caretaker at the local ice rink. He was in contact with many of the school children at the rink and in town and later was considered to be the source of infection of at least two of the cases. This man entered Roseway Hospital on April 8, 1954 and has remained there till the present, still having a positive sputum and open cavities despite intensive treatment. His source of infection was found to be an elderly grandmother who was admitted to Roseway one week after him. She died at Roseway in August 1957 from other causes but with her tuberculosis still active. This man's case is mentioned because of the possible contact he had with some of the other cases in the school outbreak. It is believed that he may have been the source of two cases directly and one indirectly. No other possible sources were discovered for these two cases. He may also have played a part in several other cases although there seems to be a more direct line of contact.

A second outside contact was discovered in September 1954 in a 14-year-old girl (C.C.), who was not a student at the Digby Schools but was home for the

summer vacation from a school in Moncton, N.B. This girl became ill during the summer months and was suspected of having a lung abscess. Subsequent investigation revealed far advanced, open tuberculosis and she was admitted to the Halifax Tuberculosis Hospital on September 27, 1954 for treatment. She subsequently underwent a left lower lobectomy, and developed a right-sided tuberculous bronchopneumonia post-operatively. She made good recovery from her disease and was discharged on August 5, 1955. I.N.H. and P.A.S. were continued on an out-patient basis until February, 1956. Her condition has remained satisfactory since discharge.

This girl was believed to be a focal point for a possible four of the cases of tuberculosis which later developed, and possibly more if all the ramifications of the contact chain could be followed.

Case 3. A 14-year-old boy (B.E.) who was known to have had a direct and prolonged contact with this girl was the next case found, in October 1954. It is also possible that he had slight contact with the rink caretaker. This boy attended the parochial school during the 1953–54 term in Grade 8 and transferred to Grade 9 in the High School in September 1954. He became very ill the latter part of September and was sent home for referral to his family physician. He was found to have a positive patch test. A chest X-ray on October 4, 1954 revealed far advanced, bilateral disease with cavitation. He was admitted to Roseway Hospital on October 15, 1954, for treatment. He quickly showed marked improvement on antimicrobials, but a left upper lobectomy was required and was carried out at the Nova Scotia Sanatorium, Kentville, in February 1956. He was finally discharged from hospital on August 22, 1956, and since then has gradually returned to a normal life. Family contacts were X-rayed and one brother had a positive patch test and showed evidence of primary tuberculosis which later proved to be inactive.

Case 4. In November 1954, following discovery of this case the 68 pupils in Grades 9(a) and 9(b) were patch tested. These were the classes that were associated with the first case discovered and this latest case. Of the 68 there were eight positive reactors. Two of these were children whose father had died of tuberculosis some years previously and this contact may account for their positive reaction. All eight positive reactors were X-rayed at a clinic held shortly after and one boy of 15 years of age (A.C.) was found to have a minimal lesion. He was treated at Roseway Hospital for a period of nine months and was discharged with his disease classed as inactive. Follow-up has revealed no evidence of reactivation. Investigation of the family contacts revealed one sibling with a positive patch test, but no significant disease. Three other siblings had negative patches, and the parents had negative X-rays. The classmates with positive patches were again X-rayed in February 1955, with no cases being found.

Case 5. At this same time, that is, in November 1954, a case was discovered in Grade 5 in the elementary school. This was a boy of 15 years of age (C.W.) with a family history of tuberculosis. His mother had a diagnosis at that time of moderately advanced, inactive, and his father was in hospital undergoing treatment for pulmonary tuberculosis. This boy was taken under supervision in 1948 as a contact of his parents. In August 1948 he had a negative patch test. X-rays and patch tests were carried out with negative results in both June and September 1949, in February and September 1950, in September 1952, and April 1953. In May 1954, a strongly positive patch test reaction was discovered, but chest X-ray on May 26 was again considered negative. A repeat X-ray on November 2, 1954, revealed slight inflammatory changes between the left 1st and 2nd ribs and a diagnosis was made of suspected minimal, active tuberculosis. Repeat X-ray on December 21, 1954 confirmed the presence of a lesion and sputum was later reported positive on culture for tubercle bacilli. The patient was admitted to the Nova Scotia Sanatorium on February 16, 1955 and on admission was found to have a marked extension of

disease with cavitation in the left lung. He received antimicrobial therapy and later had a left upper wedge resection carried out. He was discharged in July 1956 and has since been leading a normal life.

At the time of this patient's breakdown his father was receiving treatment in sanatorium, having been readmitted in May 1953, following a reactivation and extension of disease. He was home from December 22, 1953 to January 4, 1954, on a pass, during transfer from one institution to another. Sputum examinations at that time, however, were reported as negative and the patient had been on antimicrobials. He could still have been the source of his son's infection, and no other outside contact has been found.

This case points up the necessity of continued close surveillance of contacts and use of the tuberculin test. This boy was patch tested and X-rayed at six-monthly intervals for two years and then yearly for four more before he showed a conversion. Six months following the discovery of this conversion the boy had developed a moderately advanced lesion with cavitation. I hesitate to think of what might have happened in this child's school grade if he had not been followed closely and removed from school at the first X-ray evidence of disease. Again, this one case could be used as a recommendation for the institution of therapy at the time of conversion of the patch test as a preventive measure. I have no doubt that in this particular case it would have been invaluable and may have prevented the loss of 1½ years of his life in hospital and the necessary surgery.

Case 6. In March 1955 another case was found in a 15-year-old girl (J.R.) attending Grade 9. This girl had contact in school with the first and fourth cases mentioned. She also had a contact with her grandmother two years previously, prior to her admission to a sanatorium in New Brunswick. This girl had a negative patch test in March 1954 during the tuberculin survey of the school after discovery of the initial cases. Another survey was carried out in March–May 1955. This girl was then found to have a positive patch and showed X-ray evidence of active primary tuberculosis in her lungs. This was confirmed by further X-rays in April and she was removed from school and treated at home with bed rest. She made excellent improvement and was permitted to return to school in January 1956. Her subsequent history has been uneventful and she continues to lead a normal life. Her family history is negative for tuberculosis except for slight contact with her grandmother.

Case 7. This case was discovered indirectly through an attempted army enlistment. A 17-year-old boy (W.K.) left school in January 1955 and during pre-enlistment examination in March 1955 was found to have a lesion in the right mid-lung field. He was sent home and the divisional medical health officer was notified. A tuberculin patch test was done and reported positive on March 29, 1955. The X-ray diagnosis was also confirmed on recheck films and the patient was placed on bed rest at home. This proved unsatisfactory and following re-examination in April 1955, he was referred to Roseway Hospital, being admitted there on May 25, 1955. A small cavity was demonstrated in December 1955 but this healed without resection. The patient was discharged on August 23, 1956 and to date his condition remains satisfactory.

This patient was a classmate and contact of two previous cases reported in this paper. He was missed in the original patch test survey carried out in his grade so no record of his tuberculin status was available prior to his breakdown. The more likely contact source for this patient was the rink caretaker since the boy worked with him closely at the rink during the previous winter. Family contacts were all negative and have remained so. Four siblings all have negative patch tests.

Case 8. During a patch test survey carried out in March 1955, an 11-year-old boy (F.B.) attending Grade 6 in the elementary school was found to have a positive reaction. Subsequent chest X-ray revealed a suspected minimal lesion which was

later confirmed. No other contact source was ever found so it has been assumed that he received his infection from a previous case in school. He was admitted to Roseway Hospital in May 1955 and discharged in December 1955. Drug therapy was continued at home until June 1956. He returned to school in September 1956 and is leading a normal life. All siblings have negative tuberculin tests and parents' X-rays are negative.

Case 9. In April 1955 a 16-year-old boy (R.G.) attending the parochial school was found to have a minimal lesion as a result of the patch test survey. This was later confirmed and he was admitted to Roseway in June 1955 and discharged in June 1956. No cases of tuberculosis were found in his family and all siblings had negative patch tests. This boy, however, did have considerable contact with the rink caretaker and the other case discovered in March 1955, who also worked at the rink. Since discharge from hospital his condition has remained satisfactory.

Case 10. Another case located as a result of a positive patch test during survey was that of a 17-year-old boy (F.M.) attending Grade 12. This boy had a minimal lesion and was admitted to Roseway Hospital in July 1955 and discharged in April 1956. He subsequently entered university and is leading a normal life. This boy's contact source has not been definitely established, but it is possible that he had contact with a taxi driver in his home district who was found to have open tuberculosis. Family contacts have all proved negative.

Case 11. A second case was found in the parochial school as a result of the patch test survey. This was a 13-year-old boy (M.R.) who was diagnosed as primary tuberculosis in April 1955. He was placed on bed rest and antimicrobial therapy at home, but developed a drug sensitivity so was admitted to Roseway on September 14, 1955 where treatment was continued until discharge on June 10, 1956. Drug therapy was carried out at home for an additional three months following discharge. The patient returned to school in September 1956 and is presently leading a normal life. The possible source of contact in this case was in school since he had contact with two of the cases found previously. Family contacts have been negative and no other source of infection has been found.

Case 12. A case of minimal tuberculosis was found in April 1955 in a 15-year-old boy (F.C.) attending Grade 7. This boy had previous contact with his mother and had a known positive patch test since May 1953. He was found to have a small lesion, but it was never proven to be active. He was referred to the Nova Scotia Sanatorium for investigation in August 1955 but again no evidence of activity was found. He has been carried since then as an inactive case. No contact source other than his mother was found. There does not seem to be any school contact with other cases.

Case 13. A ten-year-old boy (A.D.) had a positive patch during school survey in May 1955. Chest X-ray in June showed slight left apical clouding, but he was considered to be non-tuberculous on subsequent films. During the fall of 1955 this boy developed pain and oedema in his left knee. He was treated conservatively by his physician for some time and was then referred to the Halifax Children's Hospital in December 1955 for investigation. A diagnosis was made of tuberculosis of the knee and the child was referred to the Nova Scotia Sanatorium in February 1956 being admitted on February 13, 1956. Treatment consisted of immobilization of the joint in a plaster cast and combined antimicrobial therapy. He made good recovery and was discharged on December 9, 1956. At this time no evidence of reactivation of the knee infection or of pulmonary infection has been found. The patient is leading a normal life. Family contacts were all negative. This boy's contact source was not definitely determined.

Case 14. The final case found to date was discovered in July 1956 in a 16-year-old girl (J.G.) from an outside district, but attending high school in Digby. This girl had a positive patch test during survey in March 1955. A chest X-ray in April was considered negative, although a slight change was noted in the right first interspace. The girl failed to have a recheck film until July 1956, when she was referred because of illness. She was at that time found to have a caseous lesion in the left upper lobe with cavitation, and lesser changes on the right side. The patient was immediately referred to the Nova Scotia Sanatorium, being admitted on August 6, 1956 with a diagnosis of far advanced pulmonary tuberculosis and she is still in hospital receiving treatment at this time.

Family contacts were X-rayed and found to be negative and her sister had a negative patch test, but shows conversion in 1957. This girl had a possible contact with at least one of the previously located cases in school. Her grandmother has repeatedly refused to have a chest X-ray, so the possibility of family contact has not been completely ruled out.

Control Measures

In November 1953, prior to the discovery of the first case of tuberculosis in February 1954, a chest X-ray survey of all pupils of 12 years of age and over was carried out in these schools by the mobile chest X-ray unit. Ten of the pupils who later developed active pulmonary disease were included in this survey and all were reported as having no evidence of disease at that time. Within three months the first case was found with X-ray evidence of disease. This boy had a clinical illness within one month of X-ray. The second case occurred within four months. For these two pupils a definite contact was never found.

Summary of Fourteen New Cases of Tuberculosis

Cases	Date	Diagnosed	Initials	Age	Sex	Grade	Diagnosis	Probable Source
1	Feb.	1954	N.M.	13	M	8	Far Advanced (Miliary)	Unknown
2	March	1954	M.H.	15	F	8	Pleurisy with Effusion (Minimal)	Unknown
3	Oct.	1954	B.E.	14	M	8	Far Advanced	Outside contact (C.C.)†
4	Nov.	1954	A.C.	15	M	9 b.	Minimal	Case # 3 (B.E.)
5	Nov.	1954	C.W.	15	M	5	Moderately Advanced	Familial
6	March	1955	J.R.	15	F	9 c.	Primary	School contact (Case # 3 ?)
7	March	1955	W.K.	17	M	10 b.	Minimal	Outside contact (A.S.)†
8	March	1955	F.B.	11	M	6 b.	Minimal	School contact most probable
9	April	1955	R.G.	16	M	8	Minimal	Outside contact (A.S.)†
10	April	1955	F.M.	17	M	12 a.	Minimal	Outside contact
11	April	1955	M.R.	13	M	8	Primary	School contact (Case #3 and/or # 9)
12	April	1955	F.C.	15	M	7 b.	Minimal	Familial
13	May	1955	A.D.	10	M	5 a.	Tuberculosis of Knee	Possibly School contact
14	July	1956	J.G.	16	F	12 a.	Far Advanced	School or Familial (Case # 10 ?)

† C.C.—Student from Moncton

† A.S.—Rink caretaker

During the period from March to May 1955, a tuberculin patch test survey was carried out in all grades in every school. Some mention has already been made of the cases found during this survey, but the complete picture has not been presented. A total of 1,159 pupils were tested. Of these, 130 positive reactors were found representing 12% of the total school population—38 of this number had a previously known contact outside of school and 92 had no known contact other than in school.

The 130 positive reactors were X-rayed and 5 new cases of pulmonary tuberculosis were discovered—2 primary actives and 3 minimal cases. Two other cases were later discovered in this group on follow-up X-rays.

SUMMARY

In the outbreak a total of 14 cases of active tuberculosis (13 pulmonary and 1 non-pulmonary) occurred in the schools during the period from February 1954 to July 1956. Three girls and 11 boys were infected. Of these 14, a total of 10 were found through follow-up X-rays after the discovery of a positive tuberculin patch test. Three were found by referral from the family physician and 1 was found on Army enlistment chest X-ray. There were 2 primary cases, 1 pleurisy with effusion, 6 minimal, 1 moderately advanced and 3 far advanced cases.

Four contact sources were definitely found and were responsible directly and indirectly for 8 of the cases. The contact sources were 2 family contacts, the rink caretaker and the girl from Moncton. Three other tuberculosis cases in the communities involved were considered as suspected sources of 4 other cases in the school. No possible source was found for the remaining 2 cases, but one may possibly have had a contact in the school.

Since the occurrence of the outbreak a continuing program of patch testing has been carried out in these schools. The patch conversion rate has been very low and no new cases have been found. All but 2 of the cases in the outbreak occurred before June 1955. During the winter term of 1955–56 the schools were again surveyed and a total of 1,695 patch tests were done, with 132 positive reactors. All were X-rayed and found to be negative. During the 1956–57 term the primary department and Grade 9 classrooms were again patch tested and a total of 11 positive reactors found, most of these being previously known. In all, 54 children were X-rayed—the 11 mentioned, plus 43 other known positive reactors—and no evidence of active disease was found in this group. This tuberculin test program will be continued and it is hoped that no further cases will be discovered.

Agglutination Tests on Leptospirosis in Cattle[1]

PAUL BOULANGER,[2] D.V.M., M.Sc.

LEPTOSPIROSIS, first recognized as a human disease is now known to exist in dogs, cattle, horses, sheep, swine, field mice and rats. Some of these species have been found to be frequent chronic carriers of the infection. *Leptospira pomona*, the most common causative agent of the disease in North American cattle, was isolated for the first time in 1948 by Baker and Little (1). In a general serological survey of herds in Ontario and Quebec, by means of complement-fixation and agglutination-lysis tests, we discovered (2, 3) that 8.1% of the cattle tested had *L. pomona* antibodies. In 1.3% of the total tested the antibodies were at a titre level indicative of a fairly recent infection. Subsequently 20 herds with reproductive difficulties suggestive of leptospirosis were investigated in some detail by serological, clinical and bacteriological means (4). Definite evidence of infection was obtained in six of the herds through isolation of *L. pomona* from urine of some of the animals. At the acute phase of the infection, the animals showed an agglutination-lysis titre of 1:10,000 to 1,000,000 and a complement-fixation titre of 1:20 to 1:100. These two tests are specific and reliable but they require either the maintenance of live cultures of leptospira or the use of complex and time-consuming techniques which confine their application to specialized laboratories. Stoenner, (5-6) in 1954 described a capillary tube and plate agglutination test for the diagnosis of leptospirosis utilizing a formalized antigen. Later, Bryan (7) increased the readability of the plate test through the use of a stained antigen. Their simplicity makes these tests attractive from a practical standpoint, we have therefore adopted a slight modification of these two tests and have compared the results obtained with them with those observed in a parallel test made by the generally accepted agglutination-lysis test.

Methods

AGGLUTINATION-LYSIS TEST

The agglutination-lysis test (8) was performed with viable cultures of *L. pomona* grown in Korthof's medium (9). A screening test was run on all sera using 0.1 ml. of a 1:100 serum dilution plus 0.1 ml. of antigen consisting of a 7- to 14-day-old motile culture of leptospira. When a reaction was obtained in this dilution, the test was repeated using two-fold dilutions from 1:100 to 1:800 inclusive, and then ten-fold dilutions from 1:1000 to 1:1,000,000 inclusive. The tests were incubated for 4 hours at 37° C., and the reactions evaluated in a microscope fitted with a darkfield condenser.

[1]Presented at the twenty-fifth annual Christmas meeting of the Laboratory Section, Canadian Public Health Association, December 9 and 10, 1957.

[2]Animal Pathology Laboratories, Health of Animals Division, Canada Department of Agriculture, Animal Diseases Research Institute, Hull, Que.

TUBE AND PLATE AGGLUTINATION TESTS

Preparation of Antigens. The antigens were prepared according to the technique of Stoenner (5-6) modified as follows: The leptospira were grown in Korthof's medium (9) distributed in 100 ml. amounts in 8 oz. screw-cap bottles. The inoculated medium was incubated for 7 days at 30° C., and the cultures showing good growth were killed by the addition of 1% formalin. The following day, the organisms were separated by centrifugation for 10 min. at 10,000 r.p.m. then resuspended in a borax-boric acid buffered solution, Buffer A, containing 10% formalin in physiological saline. For the plate agglutination test, the suspension was adjusted to a concentration 7 times McFarland's nephlometer tube no. 1, and to twice the same standard for the tube agglutination test.

After standing for 4 days at 9° C., the two antigens were centrifuged. The tube test antigen was resuspended in the same volume of borax-boric acid buffered solution Buffer B, containing 1:5% formalin and 15% sodium chloride. The plate antigen was resuspended in the same volume of Giemsa-buffer solution. This was prepared by adding 2 ml. of concentrated Giemsa stain to each 8 ml. of Buffer B and centrifuging before incorporating the organisms. Any precipitated or clumped organisms that formed on standing were resuspended by repeated aspiration with 10 ml. syringe equipped with a 20-gauge needle. The few clumps that were not resuspended by this procedure were discarded.

Technique of Tube Test: the test was set up in 2 ml. conical centrifuge tubes instead of in capillary tubes as used by Stoenner; 0.2 ml. of the antigen was added to 0.2 ml. of serum dilutions 1:10, 1:40, 1:160 and 1:640. The test was incubated at 37° C., for 18 hours then read by indirect light. Typical positive and negative reactions are shown in Figure 1.

Technique of Plate Test: 0.03 ml. of stained antigen was mixed with 0.01 ml. of undiluted serum or serum dilutions of 1:10, 1:40, 1:160, 1:640 on a glass plate and incubated over a specially-designed box equipped with indirect lighting. Typical reactions are shown in Figure 2.

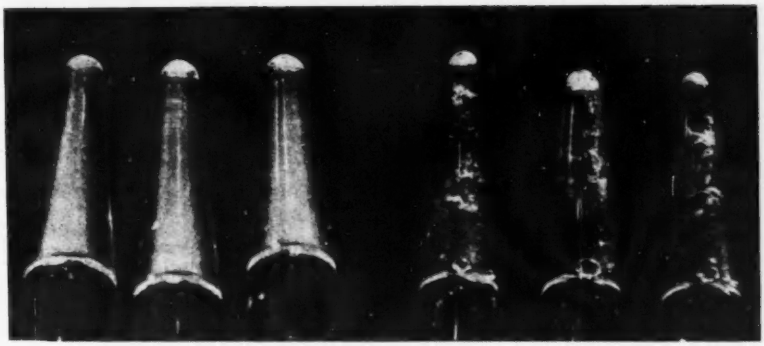

FIGURE 1. Typical Positive and Negative Tube Agglutination Tests.

FIGURE 2. Typical Positive and Negative Plate Agglutination Tests.

Source of Test Sera: the test sera originated from the 20 herds with reproduction difficulties suggestive of leptospirosis that have been described elsewhere (4). Definite leptospiral infection was demonstrated in 6 of these herds. A total of 1181 blood samples were collected at periodic intervals from the 20 herds and tested by plate and tube agglutination and by agglutination-lysis tests.

RESULTS

As stated earlier, the agglutination-lysis test was taken as the standard for comparison of the sensitivity and specificity of these two new tests. It has been our experience that animals with clinical manifestations of leptospirosis usually have agglutination-lysis titres of 1:10,000 or over. However, not every subject with such a titre will necessarily show clinical symptoms; often infection may be subclinical. Out of the 1181 sera tested, table I shows that, 56 had agglutination-lysis titres with *L. pomona* antigen of 1:10,000 and higher. All 56 reacted in plate agglutination tests, the titres ranging as high as 1:160. All but 3 of the 56, also reacted in the tube agglutination test with titres to 1:640. The three exceptions were animals that had been in contact with the infection but did not develop evident disease. In the same table it may be seen that 37 sera had titres of 1:1,000 in the agglutination-lysis test. Such results would be reported as "questionable" if judged individually without consideration of the clinical history of the herd. All 37 reacted in the plate test and all but 5 in the tube test as well. The remaining 66 sera with titres of 1:100 to 1:800 inclusive in the agglutination-lysis test showed low degree of reaction in one or all tests and most of them originated in herds where one or many animals showed clinical signs of the disease.

An attempt to correlate the results of the serological tests with the clinical manifestations of the animals is made in table II. Five animals from 4 different herds which have either aborted or showed signs of haemoglobinuria, gave at the acute phase of the disease an agglutination-lysis titre ranging from 1:10,000 to 1:1,000,000. The tube agglutination test reaction ranged from 1:160 to 1:640

TABLE I—Comparison of the Results of Plate and Tube Agglutination Tests With Those of the Agglutination-lysis Test

Number Tested	Results		Agglutination-lysis Reactions			
	Plate	Tube	Neg.	1:100 to 1:800	1:1000	1:10,000
1018	Neg.	Neg.	992	26		
4	,,	1:10	2	1	1	
2	,,	1:40	1	1		
42	Undil.	Neg.	22	18	2	
8	,,	1:10	3	3	1	1
5	,,	1:40		3	1	1
3	,,	1:160			1	2
17	1:10	Neg.	2	9	3	3*
5	,,	1:10		1	2	2
16	,,	1:40		3	8	5
5	,,	1:160			4	1
5	,,	1:640			1	4
7	1:40	1:10		1	4	2
13	,,	1:40			6	7
11	,,	1:160			2	9
16	,,	1:640				16
1	1:160	1:10			1	
3	,,	1:640				3
Total 1181			1022	66	37	56

*These three animals showed no clinical evidence of leptospirosis but were in contact with clinical cases.

TABLE II—Serological Reactions of Bleedings Taken at Intervals from 5 Clinical Cases of Leptospirosis

Clinical Data	Nov./56			Jan./57			May/57		
	A.L.	Tube	Plate	A.L.	Tube	Plate	A.L.	Tube	Plate
Aborted Nov. 9/56 5 months	100,000	160	40	10,000	640	160	1,000	40	40
Aborted Nov. 27/56 8 months	10,000	640	40	100,000	640	40	100,000	160	40
Haemoglobinuria Oct. 28/56	10,000	640	160	10,000	160	40	1,000	160	10
Haemoglobinuria Abnormal milk. Aborted Sept./56	1,000,000	640	40	1,000,000	160	40	—	—	—
Haemoglobinuria Abnormal milk Nov. 16/56	1,000,000	640	40	1,000	—	10	1,000	10	10

and the plate test from 1:40 to 1:160. These titres slowly decreased during the 2 or 3 months following the acute phase of the infection.

The reactions in the three serological tests of a herd of cattle with heavy infection are given in table III. In this herd one animal showed haemoglobinuria (no. 18), two aborted (nos. 2, 5), the organisms were demonstrated in the urine of three animals (nos. 8, 9, 18). Two animals with negligible serum titre at the first bleeding showed a considerable increase in titre when bled a month later. Marked serological reactions were obtained in 17 animals of this herd in all tests indicating a close correlation between the results of the three tests.

TABLE III—Serological Reactions of Bleedings from Nine Animals in a Herd That Experienced Acute Leptospiral Infection

Animal No.	Clinical Data	November 14/56			February 26/57		
		A.L.	Tube	Plate	A.L.	Tube	Plate
18	Bought 1952. Haemoglobinuria Oct. 28/56. Not in calf. Positive culture Nov. 26/56	10,000	640	160	1,000	640	10
2	Aborted Nov. 9/56	100,000	160	40	10,000	40	40
5	Aborted Nov. 27/56	10,000	640	40	100,000	160	160
8	Positive urine Nov. 26/56 Calved April/57	10,000	160	40	800	40	10
9	Positive urine Jan. 8/57 Bred 6 times, not in calf.	100,000	40	0	10,000		
11	Calved March 8/57	10,000	640	10	400	—	—
13	Calved April 1/57	10,000	40	10	1,000	40	10
6	Calved March 10/57	—	—	—	—	—	—
21	Calved Nov. 9/56	—	—	—	—	—	—

Summary

The plate and tube agglutination tests for leptospirosis using formalized antigen gave results closely comparable to those of the more recognized and elaborated agglutination-lysis test. The simplicity of these tests renders their use possible in most laboratories and eliminates the necessity of maintaining live leptospiral cultures.

In evaluating the results of these serological tests, as is also the case with the agglutination-lysis test, it is necessary to take into consideration the clinical history of each individual animal and of the herd to which it belongs.

ACKNOWLEDGEMENTS

The author wishes to thank Miss Eliette Patry, Mr. W. A. Boyd and Mr. G. Goyette for technical assistance in the experimental work.

REFERENCES

1. Baker, J. A., and Little, R. B.: J. Exper. Med., 1948, 88: 295.
2. Moore, T., and Rice, C. E.: Can. J. Comp. Med., 1956, 20: 362.
3. Boulanger, P., and Smith, A. N.: Can. J. Comp. Med., 1957, 21: 4.
4. Boulanger, P., Mitchell, D., Smith, A. N., and Rice, C. E.: Can. J. Comp. Med., in press.
5. Stoenner, H. G.: Am. J. Hyg., 1953, 57: 316.
6. Stoenner, H. G.: Am. J. Vet. Res., 1954, 15: 434.
7. Bryan, H. S.: Vet. Med., 1957, 52:111.
8. Schuffner, W., and Mochter, A.: zentrabl. f. Bant., Abt. 1. Orig., 1927, 101: 405.
9. Wolff, W. J.: F.A.O. Agricultural Studies, 1953, No. 25:127.

Résumé

Les épreuves de la déviation du complément et de l'agglutination-lyse nous ont permis de démontrer que l'infection du au Leptospira pomona *est passablement répandue parmi les bovins du centre du Canada. Toutefois ces deux épreuves sérologiques font appel à des procédés compliqués et lents qui tendent à limiter leur emploi aux laboratories spécialisés. Il existe un besoin évident d'épreuves simplifiés permettant de faire le diagnostic de la leptospirose dans les plus petits laboratoires. Des recherches furent donc entreprises pour établir la valeur de méthodes plus simples telles que l'épreuve d'agglutination en tube et sur plaque; on employa alors un antigène formalisé. Les resultats obtenus par ces deux épreuves parmi des troupeaux cliniquement infectés, ont démontré une concordance étroite avec ceux de l'épreuve d'agglutination-lyse. Comme pour toute épreuve sérologique entreprise sur la leptospirose, l'évaluation des résultats doit se faire en tenant compte des donnés cliniques du troupeau en général, et de chaque animal en particulier.*

FOOT-AND-MOUTH DISEASE VIRUS PHOTOGRAPHED

The first electron micrographs of foot-and-mouth disease virus reveal that it is spherical in shape and about one millionth of an inch in diameter. This is the smallest of any of the viruses affecting animals and is even smaller than polio virus. Dr. H. L. Bachrach and F. S. Breese, Jr. at the Plum Island Animal Disease Laboratory, United States Department of Agriculture reported the purification, isolation and photographing of foot-and-mouth disease virus at the fall meeting (1957) of the Electron Microscope Society of America in Cambridge, Massachusetts.

Techniques of Payment to Hospitals

B. H. HAALAND[2] AND CYRIL M. MacKAY[3]

AS a province steps across the threshold of public hospital care insurance, one of the major problems to arise is the matter of establishing a satisfactory system of remunerating hospitals for care provided to insured persons. Based on a decade of experience in Saskatchewan, this paper is intended as a commentary on the relationships between a province and its hospitals which are likely to be involved in developing a sound and workable basis for spending public funds on hospital care.

Although a description of Saskatchewan's present system of payment to hospitals has been published previously (1), some repetition on this matter has been considered desirable in order to provide logical continuity to the action taken by Saskatchewan in developing its payment system. Since information with respect to coverage and benefits of Saskatchewan's hospital care insurance program is available in published annual reports of the Saskatchewan Hospital Services Plan, further explanation will not be given here.

Principles of Payment

The growth of programs by which government agencies pay hospital bills for groups of beneficiaries has raised important questions as to the amounts which should be paid to hospitals. As the percentage of population covered by a government agency increases in a hospital area, so does the necessity of having the agency's payments to the hospital related realistically to the cost of operation. When the agency's responsibility represents coverage of all, or nearly all, of the care provided by the hospital, of course, payments must be related to cost if the institution is to continue to operate. A comprehensive program covering most of the residents of a province obviously cannot adopt a system of payment based on arbitrary dollar amounts for services rendered. It is evident, if rates of payment for a group of hospitals are based on units of service, and calculated at the average cost for all hospitals, some hospitals will show a profit on operations while others will show losses. Under provincial plans, therefore, rates of payment must be related to the cost of operating in individual hospitals. It should hardly be necessary to add that the act of administering public funds requires the adjective "economical" to precede the term "cost of operating". It is almost entirely in the interpretation of this adjective that the province becomes involved with principles of payment and development of desirable techniques of payment.

[1]Presented to the Medical Care Section at the forty-fifth annual meeting, Canadian Public Health Association, Toronto, May 27–29, 1957.

[2]Executive Director, Saskatchewan Hospital Plan, Saskatchewan Department of Public Health, Regina, Sask.

[3]Saskatchewan Department of Public Health, Regina, Sask.

A system of payment should protect, in addition to its financial interest, the hospital's program of public service. Provincial intervention in hospital matters must not be permitted to interfere with the interest and concern of individual hospitals for patient welfare. Institutional freedom and efficiency must not be stifled by the mechanics of arriving at economical operating costs. To ensure preservation of these factors the payment system should provide hospitals with a financial incentive to the improvement of quality of care.

Although there is wide variance in the financial problems affecting different hospitals, this factor should not be permitted to interfere with a province's policy of negotiating with provincial hospitals as a group, as to the system of payment to be established. The nature of the payment system must be guided by equity for the majority of hospitals involved.

A system of payment by the province should be such as to exclude the possibility of hospitals profiting through excessive use of hospital facilities. In other words, there should be no financial advantage in overcrowding hospitals for the sake of additional income.

Since hospital costs must be met in terms of current price and wage levels, a procedure for retroactive adjustment to current costs should be agreed upon. In times when price and wage levels rise sharply, previously established rates of payment cannot be expected to constitute an equitable return for services rendered for any appreciable length of time.

Consideration of a basis for remunerating hospitals for care provided to insured persons is likely to raise the question of incorporating allowances for depreciation in payment rates. Rates of payment established in Saskatchewan include allowances for depreciation on physical plant as well as equipment. The basic requirement for arriving at rates of payment which reflect the economical cost of operation in individual hospitals is an arrangement for the province to examine a written budget from each hospital. The determination of full cost principles of payment requires acceptance and use of uniform definitions, accounting, statistics and systems of reporting. Use of the Canadian Hospital Accounting Manual, published by the Canadian Hospital Association, is the logical basis for securing uniform financial data for budget purposes.

With the introduction of hospital care insurance on a province-wide basis, the matter of maintaining hospital autonomy immediately comes under review. Most certainly the province will not wish to lose the advantages which accrue from the interest of local and regional boards and organizations in administering hospitals. As the province becomes involved in the rate-setting process, however, it finds itself concerned with aspects of hospital administration previously left entirely to hospital governing bodies. It may be said, therefore, that the inauguration of a provincial program automatically creates an overlapping of responsibility and concern in certain areas of hospital administration.

At this point it should be stressed that public health authorities in Saskatchewan are convinced that preservation of a high degree of local autonomy is not only desirable but also indispensable to good hospital administration. Experience indicates the desirability, moreover, of stimulating the interest of

hospital governing bodies in many new details affecting hospital standards and operating costs.

The Role of the Public Health Department

It is not the intention to enumerate here the pros and cons of having provincial hospital care plans administered by public health departments. Whether a province will favour administration by its public health department or an independent commission is a matter which will be affected by many characteristics of the province and its people. Regardless of the choice, the public health department will be placed in the position of having to view the administration of hospital standards legislation in a somewhat different light than previously. It is generally conceded that the advent of an insurance program is certain to increase the demand for hospital accommodation. This factor in itself will cause a heavier burden in the administration of hospital standards legislation.

A somewhat more complicated factor also results from the introduction of a provincial hospital care program and becomes important to a department responsible for the administration of hospital standards legislation. The department immediately becomes a party to a situation where certain governmental aims and viewpoints may be in direct conflict. Supervision of hospital standards legislation, for example, may result in recommendations for hospital expenditures which authorities of the province's hospital care program are not inclined to recognize for rate-setting purposes. Obviously, the province must arrive at a conciliation of such opposing principles. The requirements of economical operation of the program must be in tune not only with minimum standards of legislation but also with policies which will provide for a steady improvement in hospital facilities and services. Public funds, on the other hand, cannot be permitted to cover the cost of frills in hospital services. Numerous professions and activities are involved in the process of distinguishing between necessary and unnecessary hospital services. A province naturally will look to its public health department for guidance as to the desirable schedule of benefits. It follows that public health assumes broad functions outside the traditional fields of communicable disease and sanitation immediately upon the introduction of hospital care insurance. None of these functions can be divorced entirely from the subject of payment to hospitals.

The Hospital's Viewpoint

The provincial plan will have a pronounced impact on the policies and procedures of individual hospitals. Many of the changes required in this regard will be anticipated by hospital administrators and governing bodies. The province, nevertheless, should not lose sight of the fact that hospitals are partners in a co-operative program, and as such should take part in deliberations affecting the system of payment. Not only will the system of payment itself derive benefit from such participation, but the move will contribute materially in retaining the valuable interest of many persons in hospital affairs.

Some hospitals will have a tendency to regard the provincial plan as a complete answer to their collection problems. This assumption, of course,

would hold true only if every patient were an insured person throughout his length of stay. While the province might make provision for covering a percentage of bad debts in hospital payment rates, it is not likely to provide coverage of that portion of bad debts which could be attributed to poor management, or, in other words, to poor collection policies.

As provincial administration touches on matters previously the sole concern of individual hospitals, some hospitals are likely to lean towards a policy of requesting provincial intervention in matters best left to hospital governing bodies. Probably the best example is the matter of negotiating hospital salary rates with unions. When the payment system is based on the cost of operating, hospitals may argue that since salaries must be approved for payment purposes by the province, the province should negotiate salary rates. Saskatchewan's policy is to maintain local autonomy by not taking part in wage negotiations.

Hospitals generally can be expected to welcome the introduction of a provincial insurance program. The program undoubtedly will simplify the problem of financing operating costs for most institutions. It is unlikely, however, to solve the problem of capital cost financing entirely. For some institutions philanthropic donations traditionally have been a lucrative source of funds for capital expenditures. Introduction of insurance on a national basis could result in a trend toward reduction in this form of assistance. It would seem that maintenance of a high degree of local autonomy in hospital administration would be the best method of dealing with such a trend.

Saskatchewan's Payment System

The rates paid to Saskatchewan hospitals by the Saskatchewan Hospital Services Plan are intended to meet the cost of efficient operation in individual hospitals for services provided to the Plan's beneficiaries. Such payments do not cover the cost of services excluded from the Plan's schedule of benefits, nor the costs of services provided to patients who are not beneficiaries of the Plan. Subject to medical necessity for in-patient care, the Plan pays for most services available in the hospital on behalf of beneficiaries who are admitted as in-patients, and for hospital services related to out-patient tissue pathology.

The system of payment has been arranged in such a way that each hospital, regardless of the level of occupancy, is assured of a fixed amount paid semi-monthly. In addition, hospitals receive per diem payments on submission of accounts at fixed rates, according to size of hospital. Under this system, payments to hospitals by the Plan fall into two categories, the first category representing fixed costs, and the second variable costs. The fixed costs, or otherwise described "readiness to serve" costs, include such expenditures as salaries for basic hospital staff, power and fuel costs, depreciation, and other items which remain about the same level regardless of fluctuations in the number of patients occupying hospital beds. To pay for this category of expenditures, a lump sum payment, which remains the same regardless of occupancy, is forwarded semi-monthly to all public general hospitals in Saskatchewan. These lump sum payments, in most cases, represent slightly more than the total fixed costs for the Plan's beneficiaries.

The second payment is based on actual occupancy at a per diem rate which

is estimated to represent slightly less than the cost of "variable" expenses for the Plan's beneficiaries. These "variable" expenditures are those which vary in direct proportion to the occupancy level, and represent the cost of such items as drugs, medical supplies and raw food. Current per diem rates for adults and children are $1.25 for hospitals of less than 15 beds, $1.50 for hospitals of 15 beds to 49 beds, and $1.75 for hospitals of 50 beds or over. The per diem rate for newborns is $1.00 for all hospitals.

Hospitals are required to submit annual budgets to the Department of Public Health, which are based on the system of accounting described by the Canadian Hospital Accounting Manual and Saskatchewan supplements. In addition, hospitals are required to submit audited financial statements and annual statistical returns. As hospitals in the province are audited by practising chartered accountants, these returns provide a reliable base for assessing budget estimates. This is regarded as a very important factor in establishing rates of payment in Saskatchewan. Normally, the budget covering revenue fund operations is prepared at the beginning of each year. From this budget, and information derived from the audited financial statements, and other financial and statistical returns furnished by hospitals, it is possible to establish an average equivalent rate for each hospital, which reflects the economical cost of operating. These average equivalent rates, of course, are used to calculate the semi-monthly lump sum payments. The task of reviewing budgets and discussing rate problems with hospitals is the responsibility of the Hospital Rate Board, a body composed of officials of the Department of Public Health. Rates of payment may be reviewed at any time during the year at the request of hospitals or the Hospital Rate Board.

Many hospitals, particularly the smaller institutions, make use of the services of their auditors in preparing their annual budget and reviewing rates of payment set by the Department. The services of staff members of the Department of Public Health are available to all hospitals for guidance in the use of the Canadian Hospital Accounting Manual. It is considered essential to have uniform accounting practices in all hospitals in order to make intelligent assessments and to compare experience with other institutions of similar size in the province. The Department also makes available to hospitals professional and technical advice in the fields of radiology, nursing, pharmacy, nutrition and laboratory service. Hospitals are allowed, as operating costs, a share of the cost of regional programs devoted to the improvement of the quality of care. To date in Saskatchewan, three regional hospital councils have been established with about twelve hospitals in each. The cost of their consultant staff is apportioned among participating hospitals.

Since rates paid by the Saskatchewan Hospital Services Plan are intended to cover the full cost of efficient operation in individual hospitals, a number of retroactive adjustments are sometimes necessary in rates of payment. Deficits incurred on the rates set by the Hospital Rate Board are reviewed on receipt of the hospital's audited financial statements. If the factors entering into the cause of the deficit are considered reasonable, additional payments are arranged, which in effect amount to retroactive rate increases.

Involved in hospital budgeting, of course, is the fundamental item of

estimating the number of patient days for each hospital. The expected occupancy of each hospital must be related to proper needs of the population served by that hospital. To see that these needs are met, and that funds of the Saskatchewan Hospital Services Plan are equitably distributed according to such needs, the province establishes what it terms a recommended occupancy for each hospital for budget purposes. For the past few years the province has determined recommended occupancies through application of a formula (2) which provides for consideration of such factors as length of stay, frequency of utilization, rural-urban distribution of population, area served and size of hospital. The basic figure in the formula, with respect to optimum requirements of the population generally, is 7.5 beds per 1,000 population. This ratio of beds to population is the one recommended by Saskatchewan's Health Survey Committee (3) in 1951. Application of this formula assures each hospital that its recommended occupancy has been determined on a fair basis, and that the Hospital Plan's funds are distributed throughout the province according to the relative needs of the communities involved. It is felt, also, that use of the formula has contributed towards the improvement of standards and quality of care in the province's hospitals.

The Plan's rates of payment to hospitals have been accepted by other governmental agencies, federal and provincial, as a basis for paying for care provided by their programs. Generally speaking, the province is satisfied that the system of payment provides a satisfactory means of establishing the economical cost of operation in each hospital. The province feels also that the payment system does not interfere unduly with hospital autonomy, and that hospital governing bodies are not restricted in their day-to-day efforts to improve the quality of service to the patient. It has been well accepted by individual hospitals and by the Saskatchewan Hospital Association.

Conclusions

In paying hospitals for care provided under a provincial hospital care insurance program we feel that a system of payment should provide for the following:

1. maintenance of a high degree of local autonomy in individual hospitals;
2. coverage of the full cost of efficient operation in individual institutions, with provision for retroactive payments to cover extensions in services and uncontrollable cost increases;
3. a financial incentive to the improvement of the quality of hospital care;
4. a feature which will prevent hospitals from profiting through overcrowding;
5. an arrangement for the province to examine written budgets from all hospitals, embodying uniform definitions and accounting and statistical principles. Use of the Canadian Hospital Accounting Manual is considered the logical tool for securing uniform financial data.

REFERENCES

1. Roth, F. B., *et al* Am. J. Pub. Health. 1953, *43*: 752.
2. Roemer, M. I., Myers, G. W. and MacKay, C. M.: Canad. Hosp. 1956, *33*: 35.
3. Health Survey Committee, Saskatchewan Health Survey Report, II, Hospital Survey and Master Plan, Regina, 1951, p. 44.

Pollution of Waters by Industrial Wastes

A. V. DELAPORTE[1], B.A.Sc., Chem.E., F.C.I.C., P.Eng.

The changing pattern of water pollution can best be shown by a short comparison of studies of the pollution of boundary waters made by the International Joint Commission in 1913, and in 1946–48. The investigation made in 1913 was a pioneering effort in the evaluation of bacteriological pollution. At that time pollution from industrial wastes was insignificant. The study followed the public health course in evaluating the pollution from an epidemiological standpoint.

In 1913 the economy of Ontario was essentially agrarian. The industries which discharged wastes to Ontario waters were also essentially agrarian—wool washing, dyeing, tanning, food processing, dairy, breweries and distilleries, and some mining and pulp and paper industries in the North. The significant pollution was from sanitary sewage.

By 1946 our economy had become essentially industrial. The population on the Lake Huron-Lake Erie basin had increased about three times over the 1913 figure. The sanitary sewage discharged to these waters untreated or only partially treated increased in proportion. The public health significance of the pollution by domestic sewage decreased. This was due to improved methods for treating water supplies and probably a diminishing number of carriers of water-borne diseases. This is well shown by a table from the International Joint Commission report for 1951.

The increase in pollution from industrial waste was phenomenal. It was

TYPHOID FEVER MORTALITY

Total deaths and death rates per 100,000 population

	1913		1920		1930		1940		1947	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
State of Michigan	538	17.5	300	8.2	89	1.8	11	0.2	5	0.08
Port Huron, Mich.	5	26.6	4	15.4	2	6.4	0	0	0	0
St. Clair, Mich.	0	0	1	31.2	0	0	0	0	0	0
Marine City, Mich.	4	106.4	1	26.8	0	0	0	0	0	0
Detroit, Mich.	153	29.4	61	6.1	16	1.0	5	0.3	0	0
Wyandotte, Mich.	7	70.3	17	122.7	0	0	0	0	0	0
Monroe, Mich.	1	12.1	1	8.6	0	0	0	0	0	0
Province of Ontario	446	16.7	203	7.0	76	2.3	26	0.7	6	0.1
Sarnia, Ont.	5	43.5	3	20.5	0	0	0	0	0	0
Wallaceburg, Ont.		0	0	0	0	0	0	0	0	0
Chatham, Ont.	7	56.5	3	19.2	1	6.1	0	0	0	0
Windsor, Ont.	2	9.3	3	8.2	3	4.3	0	0	0	0
Amherstburg, Ont.		0	0	0	0	0	0	0	0	0

[1]Director of Laboratories and Research, Ontario Water Resources Commission, Toronto.

estimated in 1948 that the industrial waste discharged into the waters of the Lake Huron-Lake Erie basin was roughly equal in volume to the entire discharge of industrial waste waters in Great Britain. This does not mean that the volume of active polluting wastes was as great, or that the volume of products was as high. This enormous volume of wastes was due in part to the careless use of water common in North America.

In Ontario, today, we have large concentrations of heavy industries—chemical and petro-chemical plants, metal-working and plating plants, a large increase in pulp and paper production and in mining wastes (uranium). Synthetic fibres, plastics, automobile parts and accessories, agricultural chemicals, including insecticides are but a few of the items produced for use in our complex society. New products and new processes for old products are constant challenges in the treatment of industrial wastes. New catalysts and new techniques in catalytic cracking and catalytic reforming are evolving new industries, new products, and new wastes.

These industrial wastes are less significant from a disease than from a sanitary sewage standpoint, and to quote the 1951 report of the International Joint Commission: "The chief objection to many of these wastes is that they contain oils, toxic substances or taste- and odour-producing compounds. Other polluting effects result from the discharge of solids, acids, alkali, oxygen-consuming wastes, and material which cause an unsightly appearance."

In order to delineate the problem, the International Joint Commission adopted the "Objectives for boundary waters quality control", prescribed in the reports of the boards of technical advisers to the International Joint Commission. This report of the Commission was accepted by the governments of both Canada and the United States. Later, the Ontario Water Resources Commission adopted similar objectives. The Ontario objectives are more restrictive in the discharge of toxic substances than the International Joint Commission objectives.

The Ontario Water Resources Commission Act, 1957, states:

26. (1) The Commission has the general supervision of all surface water and ground water in Ontario used as a source of water supply for any purpose with respect to their quality and;

27. (1) Every municipality or person that discharges or deposits any material of any kind into or in any well, lake, river, pond, spring, stream or other water or watercourse, or on any shore or beach thereof, or into, or in, any place that may impair the quality of the water at such well, lake, river, pond, spring, stream or other water or watercourse, is guilty of an offence and on summary conviction is liable to a penalty of not more than $1,000.00 or to imprisonment for a term of not more than one year, or to both, and;

31. (1) When any municipality or person contemplates the establishment of any sewage works or the extension of or any change in any existing sewage works, the plans, specifications and an engineer's report of the works to be undertaken, together with such information as the Commission may require, shall be submitted to the Commission, and no such work shall be proceeded with until the proposed works have been approved by the Commission.

1. (P) Sewage includes drainage storm water, commercial wastes and industrial wastes.

The Ontario Water Resources Commission objective states that:

In general, adverse conditions are caused by:
(*a*) Excessive bacterial, physical or chemical contamination.

(*b*) Unnatural deposits in the stream, interfering with navigation, fish and wild life, bathing, recreation or destruction of aesthetic values.
(*c*) Toxic substances and materials imparting objectionable tastes and odours to waters used for domestic or industrial purposes.
(*d*) Floating materials, including oils, grease, garbage, sewage solids, or other refuse.
(*e*) Discharges causing abnormal temperature, colour or other changes.

Interesting developments in assessing the effect of industrial wastes on water quality have shown that a chemical analysis, with our present methods, does not divulge the complete picture.

The following quotation from the report of the technical advisers to the International Joint Commission relates to taste examination: "Certain industrial wastes are known to cause objectionable tastes and odours in drinking waters. Many of the wastes in this section are complex in chemical structure and insufficient information was available on their behaviour when subjected to water treatment processes, particularly chlorination. Since it was believed that analytical methods alone would not give a complete measure of their taste-producing properties, it was deemed essential to undertake a special investigation of this problem."

To obtain more complete information on the organic compounds causing pollution, activated carbon filters are being used. The carbon is extracted with suitable solvents. The organic matter absorbed by the carbon is removed and by chromatography divided into various groups of compounds. The groups are separated in so far as possible into their constituent compounds, and these compounds are identified by infrared spectrography. It is a time consuming and expensive method, but it is essential that compounds present in a few parts per billion be identified. An illustration of the value of these methods is the experience of a United States group that demonstrated, over a period of three months, the presence of DDT in amounts averaging 2 p.p.b. in one water course. No long range toxicity tests have been made on the effect of the constant ingestion of subtoxic amounts of some of these organic compounds.

The toxicity of industrial wastes and the effect on the water of a stream have never been satisfactorily measured. Bio-assays of wastes are in common use. These assays facilitate short term prediction of the toxicity to animal life in a body of water but they are not entirely satisfactory. John Neil, M.A., C.P.H., biologist, Ontario Water Resources Commission, in a paper given at the fourth annual Ontario Industrial Waste Conference, stated that fish subjected to sub-lethal concentrations of cyanide lacked the energy to collect food and escape predators or otherwise compete in their environment.

It has been shown that pheasants feeding in an area treated with an agricultural chemical, while apparently not injured by feeding on seed, were in fact rendered sterile. It has been demonstrated in animals that DDT in the diet is stored in the fat around the liver. To our knowledge, there has been no complete investigation of the ultimate results of the ingestion over prolonged periods of DDT or other agricultural chemicals or by-products. New compounds and the new wastes from their production will require bio-assays and new methods of bio-assay over prolonged periods must be established.

Endothrix Ringworm Endemic in Rural Eastern Quebec

F. BLANK,[1] D.Sc.

ENDOTHRIX RINGWORM of the scalp as caused by *Trichophyton tonsurans, T. Sabouraudi, T. sulfureum, T. epilans,* and *T. violaceum* is characterized by the presence of fungal elements inside the hair shaft only. Hairs infected by these *Trichophyton* species are filled with arthrospores, 4–5μ in diameter, and therefore they become extremely breakable. The fragments, which are about 1–2 mm. long, are found free or in scales on infected areas. Sometimes the infected hairs are reduced to small dark points. The infected hairs do not fluoresce under Wood's light.

The clinical picture of endothrix infections of the scalp, so well described by Sabouraud (5) and Rivalier (4), varies considerably and may explain why this type of ringworm is often mis-diagnosed. Microscopic examination of infected hairs and isolation and identification of the dermatophyte are the only means leading to the correct diagnosis of such scalp infections, which require X-ray epilation. Infections of the smooth skin by these *Trichophyton* species usually respond to topical application of appropriate ointments.

The following *Trichophyton* species which cause endothrix ringworm have been isolated in our laboratory during the last six years from patients living in the Montreal area (Table I).

TABLE I—Isolations of *TRICHOPHYTON* Species (Endothrix Group) From Patients Living in the Montreal Area 1951–1956

	Scalp				Body			
	Children		Adults		Children		Adults	
Causative Organism	Canadian	Immigrant	Canadian	Immigrant	Canadian	Immigrant	Canadian	Immigrant
Trichophyton tonsurans	10	11			1		1	
Trichophyton Sabouraudi	1				1		1	
Trichophyton sulfureum	1				1		1	
Trichophyton violaceum	2	9	1		1			2
Total:	14	20	1		4		3	2

[1]Department of Bacteriology and Immunology, McGill University, Montreal.
This work was supported by a National Health Grant. Project 604–9–49.

TABLE II—Isolations of *TRICHOPHYTON* Species (Endothrix Group) from Native Patients in Eastern Quebec

Locality	Scalp		Body	
	Children	Adults	Children	Adults
County Gaspe-East				
Rivière-aux-Renards		*T.sulfureum*		
County Gaspe-West				
Cap Chat				*T.tonsurans*
Cap Chat	*T.tonsurans*			
Cap Chat	*T.tonsurans*			
Cap Chat	*T.tonsurans*			
Cap Chat			*T.tonsurans*	
Cap Chat				*T.sulfureum*
Ste-Anne-des-Monts	*T.tonsurans*			
Ste-Anne-des-Monts	*T.tonsurans*			
Marsoui	*T.sulfureum*			
Marsoui	*T.sulfureum*			
Marsoui	*T.sulfureum*			
Marsoui	*T.sulfureum*			
Marsoui	*T.sulfureum*			
Marsoui	*T.sulfureum*			
Marsoui	*T.sulfureum*		*T.sulfureum* + *Microsporum canis*	
Marsoui	*T.sulfureum*		*T.sulfureum*	
Marsoui	*T.sulfureum* + *Microsporum canis*			
County Bonaventure				
St. Siméon	*T.tonsurans*			
St. Siméon	*T.tonsurans*			
St. Siméon		*T.tonsurans*		
St. Siméon		*T.tonsurans*		
County Rimouski				
Rimouski	*T.sulfureum*			
Mont-Joli			*T.sulfureum*	
Mont-Joli			*T.sulfureum*	
Mont-Joli			*T.sulfureum*	
County Rivière-du-Loup				
Riv. Trois Pistoles		*T.epilans*		*T.epilans*
Riv. Trois Pistoles		*T.epilans*		*T.epilans*

Most of these endothrix infections were from isolated cases except for a small epidemic in a Montreal school due to *Trichophyton violaceum* which apparently originated from a boy recently arrived from Greece.

The number of cases found among native-born Canadians aroused some doubt that the infection originated solely among immigrants from Europe, Central America, and the Far East or their contacts, a point that is emphasized in publications from the United States (1, 2, 3).

Our investigations during 1956 and 1957 in rural Eastern Quebec where no recent immigrants were found among the rural population, proved that our suspicions were right and that endothrix ringworm is endemic in this part of the North American continent. Although we spent two days only in each Health Unit which covers an extensive area the results of these preliminary investigations are not unimpressive (see Table II).

Table II does not contain the record of other dermatophytes we have found in rural Eastern Quebec such as *Trichophyton Schönleini* (human favus), *T. granulosum*, and *Microsporum quinckeanum* (favus of mice) which will be published when our investigations are complete. However, our findings already indicate that endothrix ringworm is endemic in the area investigated. It is not confined to urban areas as recently pointed out by Georg, Hand and Menges (2).

REFERENCES

1. Georg, L. K.: Pub. Health Rep., 1952, *67*: 53.
2. Georg, L. K., *et al.*: J. Invest. Derm., 1956, *27*: 335.
3. Howell, J. B., *et al.*: A.M.A. Arch. Dermat. & Syph., 1952, *65*: 194.
4. Rivalier, E., in Desaux, A. (Ed.), Affections de la chevelure et du cuir chevelu. Paris 1953. Masson et Cie.
5. Sabouraud, R.: Maladies du cuir chevelu. III. Les maladies cryptogamiques. Les Teignes. Paris, 1910. Masson et Cie.

PROGRESS IN DENTAL PUBLIC HEALTH IN CANADA

In 1957, nine out of ten provincial departments of health had dental public health divisions. All but two of these have come into existence with the help of the federal health grants. Each of the ten provinces has a grant-aided program in operation directed almost entirely to the care of children. These programs are a valuable contribution to public health not only for the service they render but for what they are able to demonstrate to the public as effective and acceptable.

H. K. Brown, D.D.S., D.D.P.H.
Canada's Health and Welfare,
January 1958.

Canadian Journal of Public Health

EDITORIAL BOARD

R. D. DEFRIES, C.B.E., M.D., D.P.H., LL.D., *Editor*

J. T. PHAIR, M.B., D.P.H., *Associate Editor* CYNTHIA PALMER, B.A., *Editorial Assistant*

Advisory Editorial Board: J. H. BAILLIE, M.D., D.P.H.; GORDON BATES, M.D.; A. E. BERRY, M.A.SC., C.E., PH.D.; J. G. CUNNINGHAM, B.A., M.B., D.P.H.; C. E. DOLMAN, M.B., PH.D., D.P.H., F.R.C.P., F.R.S.C.; EDNA L. MOORE, REG.N., LL.D.; G. D. PORTER, M.B.; A. H. SELLERS, B.A., M.D., D.P.H.; F. O. WISHART, M.A., M.D., D.P.H.; J. WYLLIE, M.A., M.D., CH.B., B.SC., D.P.H.

NEW HOSPITAL CONSTRUCTION

THE National Health Insurance Plan will come nearer to reality with the announcement of federal payments to be commenced on July 1, 1958, or on January 1, 1959, to those provinces which will have signed agreements with the federal government under the terms of the Hospital Insurance and Diagnostic Services Act. The Province of Ontario became the first province to sign an agreement on March 3, and the plan will commence in that province on January 1, 1959.

The announcement at the last session of Parliament of additional federal assistance to the provinces for the construction of necessary hospital and health facilities is, therefore, of great importance, as it coincides with provincial planning to meet the increased demand on hospital facilities.

The Hospital Construction Grant was originally established in 1948 as part of a five-year program to provide federal assistance to the provinces to stimulate the construction of hospital beds, to alleviate a shortage then estimated as approximately 40,000 beds. At the end of this time, the number of beds undertaken exceeded the original estimate and it was possible to reduce the Grant from approximately $13,000,000 to $6,500,000 annually. At this time, three new Grants were added to the National Health program for Child and Maternal Health, Medical Rehabilitation and Laboratory and Radiological Services.

It was found during the second five years that the reduced amount allocated to the Grant was insufficient to meet the challenge of the unprecedented growth in population, the changing pattern in the utilization of hospitals and the steady increases in the costs of hospital construction. In the original Grant, federal assistance had been provided at the level of $1,000 per bed for acute hospital beds or bed-equivalents, i.e. every 3 bassinets, or certain eligible floor areas; $1,500 per chronic bed, including mental hospitals and tuberculosis sanatoria, as well as $500 per bed for residence beds for nurses.

On January 1, 1958, the terms of the Hospital Construction Grant were expanded to allow the consideration of projects or amendments to current projects at new rates of $2,000 per acute, chronic or convalescent bed, including mental and tuberculosis beds, as well as for bed-equivalents. Enlarged assistance in the amount of $750 per bed can be provided towards the construction

of nurses' residence beds and, also, for internes' residence beds. Certain floor areas of hospitals and public health facilities, devoted to community health services, continue to be eligible for consideration as bed equivalents. In order to reassure those planning for and undertaking the construction of hospitals, the government announced that the new levels for assistance would be maintained for the next five years and that the amounts available to the provinces under the allocation of the Grant would be substantially increased.

For the first time there has been introduced federal assistance to be at least matched by the provinces for major renovations and alterations to existing hospital accommodation.

It is, of course, appreciated that the major responsibility remains with provincial and local authorities to provide the necessary funds for new hospital construction. The rising cost of hospital construction has been a serious factor and the increased grant will help to absorb the additional expenses. Construction costs today range from $6,000 to $12,000 or more per bed. The federal assistance is of great importance in initiating new construction. With the implementing of the National Hospital Insurance Plan, local authorities will feel encouraged to undertake additional hospital accommodation and hospital deficits should become a problem of the past.

WORLD HEALTH ORGANIZATION—TENTH ANNIVERSARY

CHRONOLOGICALLY, the World Health Organization has been an operating health agency for only ten years. In terms of accomplishment, however, it is age old. While there is nothing new in concerned countries banding themselves together to lessen either the incidence or the spread of communicable or other preventable forms of disease, there is something novel in the continuing mass application of the principle of our being our brother's keeper.

It is accepted that the success achieved was conditioned by the fact that there was an unanimity of thinking in the larger countries as to the etiology, epidemiology, treatment and prevention of many, if not most, of the major communicable diseases. The war had done much to develop effective control procedures. All that was needed was the universal application of this recently acquired knowledge and experience. This fact does not, however, detract from the credit which is due to those who pressed continuously for the establishment of the World Health Organization.

W.H.O. might be described as a world market-place where ignorance is traded for knowledge, where action is bartered for apathy, and where our most valuable commodity—human life—is the accepted currency.

It is not our thought that we should attempt to recite the purposes, objects and accomplishments of this amazing organization but, rather, to note its tenth anniversary, and to pay tribute to the leadership given by those responsible for its direction, to the zeal of the staff, and particularly, to the spirit of tolerance exhibited by those of diverse ideologies, philosophies and traditions who make up its national components.

We, in Canada, have a right to be proud of the role this country has played in the initiation and development of this remarkable agency.

What Do We Want in Health Education in Canada?[1]

A Panel Discussion

DR. JULES GILBERT,[2] Chairman

PARTICIPANTS:[3]

D. CURREY, M.D., Medical Officer of Health, St. Catharines–Lincoln Health Unit, St. Catharines, Ontario

M. JARRETT, D.D.S., Director of Dental Services, Wellington County Health Unit, Fergus, Ontario

MRS. G. PURCELL, REG.N., Director of Public Health Nursing, East York–Leaside Health Unit, Toronto, Ontario

G. WILSON, C.S.I.(C), East York–Leaside Health Unit, Toronto

F. J. HARDEN, D.V.M., Department of Health, Peterborough, Ontario

RALPH WENDEBORN, M.P.H., Director of Health Education, Ministry of Health, Manitoba

MILTON H. BROWN, M.D., Professor of Public Health and Preventive Medicine, Head of Department of Public Health, School of Hygiene, University of Toronto, Toronto

SUMMARY OF DISCUSSION

Dr. D. Currey, medical officer of health, looks at the problem from the point of view of the local health unit. He sees the health educator as a consultant in educational methods and either as the person responsible for procuring health educational materials, or as the one doing most of the field work in health education, or, even better, as combining both functions. The health educator should work with lay and professional groups, not omitting the staff of the health unit itself. He can initiate new programs of education and, when necessary, represent the health unit on committees and voluntary health agencies. He can take part in staff education programs or those destined for public health students. In short, he can help the unit to do a more complete job and can build better public relations.

Dr. M. Jarrett, director of dental services, restricting himself to dental health, is depending on the health educator to make the general public aware of the universal problem of dental disease. The dentist will supply him with the data and subject matter to be disseminated and the health educator will stimulate interest by varying the presentation of salient points for a control program and skilfull use of the mass media. Dr. Jarrett gave several examples of the kinds of services that can be rendered by the health educator to make the work of the public health dentist much easier.

Mrs. G. Purcell, who administers a public health nursing program in an urban district, has been able to appreciate the many ways in which a public health educator can be of help in a health unit, and these were described as specific instances at the various ages of a family's life cycle. The public health educator sets the stage for education by the public health nurse, particularly by helping her to make more use or better use of her opportunities. Through the group approach, he can find out why some people are not interested and show how to present the information in order to reach the greatest number. As a resource person, he can procure new tools and obtain the help of volunteers. Mrs. Purcell sees a great opportunity for the public health

[1]Report of panel discussion presented by the section of Health Education at the 45th annual meeting of the Canadian Public Health Association, Toronto, May 27–29, 1957.

[2]Director of Health Education, Ministry of Health, Quebec.

[3]Several papers from this panel discussion will be published.

educator in the school where he can advise the teacher about health teaching at the various levels and supply her with references about special projects.

Mr. G. Wilson, sanitary inspector, considers himself and every other member of the staff a health educator. As far as environmental sanitation is concerned in a rural area, he claims that its progress needs the full support of the public. The health educator can help to gain support by writing press articles and radio broadcasts, by procuring various printed materials and visual aids, and by suggesting the best educational methods in all circumstances.

Dr. F. J. Harden, public health veterinarian, appreciates the need for education in the sanitation field. He gave several examples of group meetings for instruction on the value of sanitary food production and processing where the special techniques and expert advice of the health educator would be of great benefit.

Mr. R. Wendeborn, public health educator, reiterated that health education is everyone's job but feels that the health educator can assist with the presentation of information. Such assistance should start with the planning of the program and continue with community organization where the public health educator can help to co-ordinate many efforts. Different aspects include the arrangement of good public relations in order to obtain the support, understanding and participation of the public; the preparation or securing of good materials; and use of materials to best advantage. The function of the health educator is to give to health education its maximum efficiency by suggestion of better methods, procurement of untapped resources, proper use of motivation devices or by evaluation of the program itself.

Dr. M. H. Brown, Professor of Public Health and Preventive Medicine, was naturally interested in the training of public health educators and the kind of candidates that are sent to take the formal course in public health, the way they are recruited, the disciplines they come from, and the experience they gain before taking their public health course. After listening to all that is expected of a public health educator and all the services he is expected to render, he came to the inevitable conclusion that a one-year course is not enough to produce that kind of superman and it is small wonder that consideration is being given to a two-year course leading to a master's degree.

A DECLARATION OF PRINCIPLES

In reporting the discussions, as moderator, my duty could end here, but because of my interest in health education at all levels over the past twenty years, I have tried to crystallize the thinking of these several persons into the following "declaration of principles" on which I hope all are agreed, or at least a chain of arguments justifying the program of health education as I understand it.

- Health education is a basic function of all health departments and should be the main objective of all voluntary health agencies.
- Health education is a definite responsibility of all public health workers and should be the basis of all their activities in their contacts with individuals and families.
- The most efficient health education is the one performed from person to person, in home visits, in clinics, in inspections, and in any interview of an educational nature, especially in consultations taking place in the doctor's office.
- Health education so performed will never reach an entire population and therefore should also use group and mass media, even if it then loses in depth what it gains in width.
- Ideally, every public health worker should carry out a program of health education addressed to the groups and to the general public of his territory.
- In practice, this is rarely possible, usually because of lack of time, sometimes because of lack of inclination, and it is wise to assign this work specially, though not exclusively, to a properly selected and trained person.

- This person should, in the first place, facilitate the work of the other staff members who are able and willing to do some health education with groups and communities, assisting them especially in the planning of their program, with the necessary community organization, and by procuring or producing materials for them or with them.
- This health educator should also carry out locally a continuous health education program, based on health problems, co-ordinated with other educational efforts, according to the best methods and with the best motivation appeals, properly and periodically evaluated, and making use of available materials and resources.
- These materials should be prepared centrally, preferably at the national level, but distributed and used locally, as much as possible.
- Adult education cannot and should not replace child education; it aims only to supplement it. Therefore no effort should be spared to provide every teacher-training institution with the services of a teacher qualified in personal and public health.

Nutrition

The Contribution of the Home Economist to Public Health[1]

ELEANOR BLACKIE[2]

Home economists are active in almost every phase of modern life—from the home to the largest organizations and industries. Each and every one of these women can make a contribution to public health by her own example when she appears in public, either as a private citizen or as a professional worker.

Perhaps a word about the training of a home economist is in order since I often find myself referred to as "the sewing teacher", and I am sure many others have had the same experience. University home economics courses do include sewing and cooking, but preceding these and accompanying them are courses in chemistry, biology, economics, sociology, as well as nutrition, child care, and family living. Home economics courses cover a wide variety of subjects in addition to actual skills in cooking and sewing.

The home economist who is a homemaker and mother exerts a strong influence on her own family by the way she feeds them, by the way she looks after their clothing, by the way she trains her children in good habits of personal care, and by her housekeeping in general. Children who are used to being well fed, and who are used to being part of a harmonious family group, in a well-run home are almost certain to grow up to be healthy, happy citizens ready to carry on the work of the community.

With the present educational system in Nova Scotia, practically every teenage girl comes under the influence of a home economics teacher at some time or other, in the school lunch room or at social functions if not in the classroom. Thus, it would be hard to overestimate the contribution that the home economics teacher can make to public health. The home economics

[1]Presented at the sixth annual meeting of the Atlantic Branch, Canadian Public Health Association, Kentville, N.S., November 6–9, 1956.

[2]Home Economics Representative, Department of Agriculture and Marketing, N.S.

students learn something of proper nutrition and food preparation, and proper dish washing as well as other house cleaning methods. They are trained in health and grooming habits, and they learn about child-care and family living. These girls must take home at least some of the knowledge they gain, and the effect of the training cannot help but be felt in many of the homes and communities of our Province.

Dietitians in hospitals form another large group of home economists, and while their chief work may be concerned with proper feeding of the sick, their influence can be widespread if discharged patients will practice dietary habits learned in the hospital. Dietitians in other institutions such as restaurants and industrial cafeterias can exert a tremendous influence by the way they plan menus, by the way the food is prepared and served, and by insisting on proper cleanliness in all phases of their work. Many of our young men and women are in the armed forces and come under the influence of still another group of dietitians. Dietary habits learned in the services can be practised long after the period of service is over.

The contribution made by public health nutritionists is well known to you all. They speak to many urban and rural groups and visit countless homes where their help and advice is invaluable.

Those of us who are doing extension work meet a cross-section of our rural population. They meet with Women's Institutes, Federations of Agriculture and occasionally with other rural groups; usually as such a meeting a food demonstration is given, with emphasis being placed on the nutritional value as well as the preparation of various dishes.

For the past year there has been one extension home economist engaged in milk promotion work, and while the idea of this is to increase the sale of milk and other dairy products, increased sales must mean increased consumption of the products. The 4-H Club program includes food and clothing projects in which many rural girls are enrolled. For the benefit of those who are not familiar with the term, the 4 H's stand for head, heart, hands and health. These 4-H projects might be called home economics courses in miniature, one stresses nutrition and food preparation, while the other emphasizes proper construction and care of clothing as well as good grooming. Both stress good health habits and training for good citizenship. Perhaps it can best be summarized by saying that club members are encouraged to live up to their 4-H pledge: I pledge my head to clearer thinking, my heart to greater loyalty, my hands to larger service, my health to better living, for my club, my community and my country.

Program

JOINT MEETING

CANADIAN PUBLIC HEALTH ASSOCIATION
BRITISH COLUMBIA BRANCH
AND
WESTERN BRANCH,
AMERICAN PUBLIC HEALTH ASSOCIATION

HOTEL VANCOUVER, HOTEL GEORGIA
AND
HOTEL DEVONSHIRE

VANCOUVER, BRITISH COLUMBIA

MAY 20 - 22, 1958

PRE-CONVENTION MEETINGS

SUNDAY, MAY 18

9.00 a.m.—Conference of State and Provincial Health Authorities.
Salon D, Hotel Vancouver

9.00 a.m.—Task Force, Western Branch, American Public Health Association.
Salon E, Hotel Vancouver

9.00 a.m.—Committee on Health Problems of Migratory Labour.
Salon C, Hotel Vancouver

MONDAY, MAY 19

9.00 a.m.—Conference on Medical Aspects of Civil Defence.
Salon B, Hotel Vancouver.

9.00 a.m.—Annual Public Health Institute, Health Branch, B.C. Department of Health and Welfare.
and
2.00 p.m.
Ballroom, Hotel Georgia

Executive Council, Canadian Public Health Association.
Salon D, Hotel Vancouver

Executive and Regional Board Meeting, Western Branch, American Public Health Association.
Salon C, Hotel Vancouver

ANNUAL MEETING

TUESDAY, MAY 20, 9.00 a.m.

GENERAL SESSION

Banquet Room, Hotel Vancouver

Presiding: S. STEWART MURRAY, M.D., President, Canadian Public Health Association.

GEORGE R. F. ELLIOT, M.D., President, Western Branch, American Public Health Association.

9.00 a.m.—Invocation: The Very Rev. NORTHCOTE BURKE, D.D., Christ Church Cathedral, Vancouver, B.C.
Welcome: The Honourable ERIC MARTIN, Minister of Health and Welfare, Province of British Columbia.
His Worship Mayor FRED J. HUME, City of Vancouver.
Presidential Remarks.
Presiding: SUSAN McMASTER, M.D.
9.30 a.m.—Keynote Address **PRACTISING EFFECTIVE PUBLIC HEALTH.** WILSON G. SMILLIE, M.D., Formerly Executive Director, State Charities Aid Association, New York.

TUESDAY, 10.30 a.m.

DENTAL PUBLIC HEALTH SECTION

Tudor Room, Hotel Georgia
Presiding: C. W. B. McPHAIL, M.S.D.
10.30 a.m.—Introduction and Business Meeting.
11.00 a.m.—Pet Projects.

TUESDAY, 10.30 a.m.

SECTIONS OF ENVIRONMENTAL SANITATION AND VETERINARY PUBLIC HEALTH

Salon A, Hotel Vancouver.
Presiding: W. E. H. BRANSTON, C.S.I.(C).
10.30 a.m.—Highlights of Sanitation Programs and Activities.
Master of Ceremonies: HAYE EVANS

TUESDAY, 10.30 a.m.

SECTIONS OF EPIDEMIOLOGY AND VITAL AND HEALTH STATISTICS

Salon C, Hotel Vancouver.
Presiding: WILLIAM E. REYNOLDS, M.D.
10.30 a.m.—Demographic Interpretation of Cancer Problem. HARDIN B. JONES, Ph.D. Discussant: A. J. PHILLIPS, Ph.D.
Cancer in New Mexico. ARTHUR DJANG, M.D.

TUESDAY, 10.30 a.m.

HEALTH EDUCATION SECTION

Salon D, Hotel Vancouver.
Presiding: Mrs. MABEL S. RICKETT, M.P.H., R. H. GOODACRE, C.P.H.
Opening Remarks and Introduction of the Program.

TUESDAY, 10.30 a.m.

SECTIONS OF HEALTH OFFICERS AND INDUSTRIAL HYGIENE

Salon M, Hotel Vancouver.
Presiding: JAMES A. TAYLOR, M.D.
10.30 a.m.—Vocational Rehabilitation. A. C. PINKERTON, M.B.
11.00 a.m.—Use of Antibiotics in Food Preservation. G. H. TARR.
11.30 a.m.—Industrial Hygiene Problems in the Field of Agriculture. NORMAN WILLIAMS, M.D.

TUESDAY, 10.30 a.m.

LABORATORY SECTION

Connaught Room, Hotel Georgia.

Presiding: ALCOR S. BROWNE, Ph.D.

10.30 a.m.—Evaluation of Laboratory Performance. W. R. GIEDT, M.D., JEAN PUFFER, JOHN EDEN, M.D., A. R. SHEARER, B.A.

11.15 a.m.—New Treponemal Antigens and Tests. JOSEPH PORTNOY, Ph.D.

The California State Laboratory Experience with Treponemal Antigens. ALCOR S. BROWNE, Ph.D., MARJORIE BASSETT.

TUESDAY, 10.30 a.m.

MEDICAL CARE SECTION

Kent Room, Hotel Georgia.

Presiding: DONALD M. COX.

10.30 a.m.—Opening Remarks. DONALD M. COX.

Can Non-Profit Medical Coverage be Provided for the Poor Risk—the Elderly, the Self-Employed, the Partially Incapacitated Worker, the Retired? S. A. JENNINGS, Ph.D.

11.00 a.m.—The Hospital Insurance Pattern in Canada. G. D. W. CAMERON, M.D.

11.30 a.m.—Medical Staff Control of Hospital Stay. L. E. RANTA, M.D.

TUESDAY, 10.30 a.m.

NUTRITION SECTION

Salon B, Hotel Devonshire.

Presiding: RUTH R. HUENEMANN, D.Sc., L. B. PETT, M.D.

Hazards to the Adequate Nutrition of Children. J. F. McCREARY, M.D.

TUESDAY, 10.30 a.m.

PUBLIC HEALTH NURSING SECTION

Ballroom, Hotel Georgia.

Presiding: MARY E. WILSON.

10.30 a.m.—Business Meeting.

TUESDAY, 12.00 p.m.

ENVIRONMENTAL SANITATION SECTION

Luncheon.

Salon A, Hotel Vancouver.

TUESDAY, 12.30 p.m.

LABORATORY SECTION

Luncheon and Business Meeting.

C.P.H.A. Western Branch, A.P.H.A.

Regency Room, Ritz Hotel.

TUESDAY, 12.30 p.m.

NUTRITION SECTION

Luncheon.

Salon B, Hotel Devonshire.

TUESDAY, 2.00 p.m.

SECTION OF DENTAL PUBLIC HEALTH

Salon M, Hotel Vancouver.

Presiding: C. W. B. McPHAIL, M.S.D.

2.00 p.m.—The Use of Auxiliary Personnel.
Dental Hygienists. DAVID M. WITTER, D.D.S.
Dental Assistants. To be announced.
Discussion on the New Zealand Dental Nurses Program.
3.00 p.m.—Burlington Orthodontic Research Program. W. H. FEASBY, D.D.S.
3.45 p.m.—Intermission—VISIT TO EXHIBITS.
4.00 p.m.—Caries Control. M. E. JARRETT, D.D.S.

TUESDAY, 2.00 p.m.

SECTIONS OF VETERINARY PUBLIC HEALTH AND ENVIRONMENTAL SANITATION

Salon A, Hotel Vancouver.
Presiding: R. BOWERING, M.A.Sc.
2.00 p.m.—Historical Development of Shellfish Sanitation Program in U.S.A. and Canada. J. R. MENZIES.
2.20 p.m.—Problems in the Sanitary Control of Shellfish. EUGENE T. JENSEN.
2.50 p.m.—A Short History of Shellfish Poisoning on the West Coast of North America. R. BOWERING, M.A.Sc.
3.00 p.m.—Occurrence of Toxic Shellfish in British Columbia in 1957. LEWIS ANDERSON, M.D.
3.30 p.m.—Shellfish Control Procedures in Washington State. JOHN GERRARD.
3.40 p.m.—Intermission. VISIT TO EXHIBITS.
4.00 p.m.—The Importance of Sanitation in the Handling of Fisheries Products. JOHN A. DASSOW.
4.30 p.m.—A Municipal Program in Fishery Sanitation. R. B. WATKINS, D.V.M.

TUESDAY, 2.00 p.m.

SECTION OF EPIDEMIOLOGY

Salon C, Hotel Vancouver.
Presiding: L. S. GOERKE, M.D.
2.00 p.m.—A Study of Accidental Home Poisonings, Ottawa, 1957. D. KUBRYK, M.D.
2.35 p.m.—Accidental Poisonings in the Greater Vancouver Area. A. A. LARSEN, M.D.
3.10 p.m.—California Chiropractors—An Epidemiologic Study of Causes of Death and Other Characteristics. R. T. RAVENHOLT, M.D.
3.45 p.m.—Polio Antibody Levels in Children Following Various Vaccination Schedules and at Different Ages. C. W. J. ARMSTRONG, M.D., D. R. E. MacLEOD, M.D., G. W. O. MOSS, M.D., and F. C. POTTER, B.Sc.A.

TUESDAY, 2.00 p.m.

SECTION OF HEALTH EDUCATION

Salon D, Hotel Vancouver.
Presiding: RALPH WENDEBORN, M.P.H.
2.00 p.m.—Practical Applications of Social Science Research. KASPER D. NAEGELE.
2.25 p.m.—Inservice Education. PAULINE ROBERTS, SAM REED.
2.50 p.m.—Home Accident Programs. MARGARET BEATIE, MARVIN POWELL.
3.15 p.m.—Intermission. VISIT TO EXHIBITS.
3.45 p.m.—Use of Radio and Television. CAESAR BRANCHINI, HARVEY W. ADAMS.
4.10 p.m.—Relationship between Public Health Education and School Health Education. EVELYN WITTE, LORNE E. BROWN.
4.35 p.m.—Health Education in Clinics and Hospitals. CHRISTIAN SMITH, MARGUERITE DE LA VEGA.

TUESDAY, 2.00 p.m.

INDUSTRIAL HYGIENE SECTION

Kent Room, Hotel Georgia.

Presiding: R. B. SUTHERLAND, M.D.

2.00 p.m.—Role of the Industrial Hygienist. Mr. J. H. JOHNSON.
Certification of the Industrial Hygienist. C. EINERT, M.D.
The Problem of Air Pollution. MORRIS KATZ, Ph.D.
Health Services in Small Plants. R. B. SUTHERLAND, M.D.

TUESDAY, 2.00 p.m.

LABORATORY SECTION

Connaught Room, Hotel Georgia.

Presiding: E. J. BOWMER, M.B.

2.00 p.m.—A Chronic Disease Program in a Health Department and the Laboratory Demands. A. L. CHAPMAN, M.D.
2.30 p.m.—Transportation of Specimens. R. D. STUART, M.D.
3.15 p.m.—Intermission: VISIT TO EXHIBITS.
3.30 p.m.—New Laboratory Techniques as Applied to Milk and Dairy Products. LUTHER A. BLACK, Ph.D.
4.00 p.m.—Radiological Methods for Public Health Laboratories. SIMON KINSMAN, Ph.D.
4.30 p.m.—Food and Drug Additives as Potential Toxic Agents. TED A. LOOMIS, M.D.

TUESDAY, 2.00 p.m.

MEDICAL CARE, HEALTH OFFICERS AND PUBLIC HEALTH NURSING SECTIONS

Ballroom, Hotel Georgia.

Presiding: J. L. GAYTON, M.D.

TEAMWORK IN COMMUNITY HEALTH SERVICES.

2.00 p.m.—The General Hospital in its Community Health Role. J. L. M. ANDERSON, M.D.
2.40 p.m.—Hospital—Home Care in a Metropolitan Area. M. CHRISTINE LIVINGSTON.
Nursing Care in the Home as Part of a Health Unit Service. DOROTHY E. SLAUGHTER, M.A.
3.10 p.m.—Intermission: VISIT TO EXHIBITS.
3.30 p.m.—Mental Health Aspects of Community and Hospital Health Services. J. S. TYHURST, M.D.
4.00 p.m.—The Contribution of Prepaid Medical Care. E. C. McCOY, M.D.
4.20 p.m.—Discussion.

TUESDAY, 2.00 p.m.

NUTRITION SECTION

Salon B, Hotel Devonshire.

Presiding: RUTH R. HUENEMANN, D.Sc., L. B. PETT, M.D.

2.00 p.m.—Effects of Saturated and Unsaturated Fats in Animals. R. L. SWANK, M.D.
Food Fads. MARY L. JOHNSON.
Panel Discussion: **GERIATRIC NUTRITION.** Moderator: L. B. PETT, M.D. **Some Social Aspects.** Mrs. FRANK McKENZIE. **What Should We Be Doing?** M. McKENNA.

TUESDAY, 2.00 p.m.

VITAL AND HEALTH STATISTICS

Salon E, Hotel Vancouver.

Presiding: JOHN DOUGHTY, M.A.

2.00 p.m.—Panel Discussion: **PERI-NATAL MORTALITY–THE PROBLEM AND ITS DEFINITION.** Moderator, ALEX AGNEW, M.D. Participants, H. G. PAGE, M.A., A. HARDYMENT, M.D., ESTHER J. ROBERTSON, JACOB YERUSHALMY, Ph.D., J. M. McLENNAN, M.D.

4.30 p.m.—Business Meeting.

TUESDAY, 8.00 p.m.

ANNUAL MEETING: BRITISH COLUMBIA BRANCH, CANADIAN PUBLIC HEALTH ASSOCIATION

(Members of the Western Branch, A.P.H.A. cordially invited)

Salon A, Hotel Vancouver.

Guest Speaker: HUGH PAUL. M.D., Hon. Consultant in Epidemiology, Birmingham Regional Hospital Board, Birmingham, England.

Subject: **Whither The Dinosaur?**

WEDNESDAY, MAY 21, 8.00 a.m.

BREAKFAST, UNIVERSITY OF CALIFORNIA PUBLIC HEALTH ALUMNI ASSOCIATION

Salon A, Hotel Vancouver.

WEDNESDAY, 9.00 a.m.

GENERAL SESSION

Banquet Room, Hotel Vancouver.

Presiding: A. JOHN NELSON, M.D.

PROGRAM DESIGN AND EVALUATION AS A CONTINUING FUNCTION OF HEALTH DEPARTMENTS.

9.00 a.m.—The Role of the Public Health Administrator. WILSON G. SMILLIE, M.D.

9.25 a.m.—The Role of the Epidemiologist. WM. ALLEN LONGSHORE, M.D.

9.50 a.m.—The Role of the Statistician. JOHN DOUGHTY, M.A.

Special Commemoration Session Marking the Tenth Anniversary of the World Health Organization.

10.15 a.m.—The Program of the World Health Organization; In Retrospect and Prospect. M. G. CANDAU, M.D., Director-General World Health Organization.

11.15 a.m.—VISIT TO EXHIBITS.

WEDNESDAY, 12.30 p.m.

LUNCHEON

(Open to all members C.P.H.A. and Western Branch, A.P.H.A.)

Banquet Room, Hotel Vancouver.

Presiding: GEORGE R. F. ELLIOT, M.D., President, Western Branch, American Public Health Association.

S. STEWART MURRAY, M.D., President, Canadian Public Health Association.

Presentation of Honorary Life Membership in the Canadian Public Health Association

Introduction of the Guest Speaker: G. F. AMYOT, M.D., Deputy Minister of Health, Province of British Columbia.

Guest Speaker: The Honourable H. H. STEVENS, P.C., LL.D., Vancouver.

Subject: **The Pacific North-West—Land of the Future.**

WEDNESDAY, 2.30 p.m.

GENERAL SESSION

Banquet Room, Hotel Vancouver.

Presiding: ROBERT DYAR, M.D.

SOME PRACTICAL EXAMPLES OF PROGRAM DESIGN AND EVALUATION IN:

2.30 p.m.—Medical Care. MALCOLM G. TAYLOR, Ph.D.
3.00 p.m.—Public Health Dentistry. FRANK McCOMBIE, L.D.S.
3.30 p.m.—Intermission: VISIT TO EXHIBITS.
3.45 p.m.—Sanitation. A. HARRY BLISS, M.S.
4.15 p.m.—Public Health Nursing. TRENNA G. HUNTER, B.A.Sc.
4.45 p.m.—Panel Discussion.

THURSDAY, MAY 22, 8.00 a.m.

BREAKFAST, UNIVERSITY OF TORONTO, SCHOOL OF HYGIENE ALUMNI ASSOCIATION

Salon B, Hotel Vancouver

THURSDAY, 9.00 a.m.

EPIDEMIOLOGY, LABORATORY, HEALTH OFFICERS AND VETERINARY PUBLIC HEALTH SECTIONS

Salon M, Hotel Vancouver.

Presiding: CHARLES F. PAIT, Jr., M.D.

9.00 a.m.—Panel Discussion of Influenza 1957. A. J. RHODES, M.D., DAVID B. LACKMAN, Ph.D., J. K. W. FERGUSON, M. D.
10.30 a.m.—Intermission: VISIT TO EXHIBITS.

THURSDAY, 9.00 a.m.

ENVIRONMENTAL SANITATION SECTION

Salon C, Hotel Vancouver.

Presiding: SAMUEL I. REED.

9.00 a.m.—Tracing of Typhoid Carriers by Means of Sewage Examination. ALCOR F. BROWNE, Ph.D.
Tracing of Typhoid Carriers by Means of Examination of Contaminated Stormwater. GEORGE H. ARMSON, C.S.I.(C).
10.00 a.m.—The Role of The Sanitarian in Home Safety. PHIL DYKSTRA.
11.00 a.m.—Classroom Lighting and Physiology of Vision. RONALD WORKMAN, O.D., HOWARD C. HALL, O.D.

THURSDAY, 9.00 a.m.

INDUSTRIAL HYGIENE AND MEDICAL CARE SECTIONS

Kent Room, Hotel Georgia.

Presiding: DONALD M. COX.

9.00 a.m.—Rehabilitation Services from the Viewpoint of:
The Workmen's Compensation Board. WM. E. MILBRANDT, M.D.
The Physiatrist. D. C. SYMINGTON, M.D.
The Non-profit Medical Plan. J. A. LEROUX, M.D.
10.30 a.m.—Intermission: VISIT TO EXHIBITS.
10.45 a.m.—Industrial Back Injuries. F. P. PATTERSON, M.D.
11.20 a.m.—Occupational Dermatitis. W. S. MADDIN, M.D.

THURSDAY, 9.00 a.m.

PUBLIC HEALTH NURSING SECTION

Salon A, Hotel Vancouver.

Presiding: RUTH MORRISON, B.S.

COMBINED OPERATIONS—THE EFFECTIVE USE OF AUXILIARY WORKERS IN HEALTH AGENCIES.

The Right Person for the Right Job. Mr. DEAN GOARD.
Voluntary Service. Mrs. FREDERICK FIELD.
Interpersonal Relationships. W. G. DIXON, M.A.
The Practical Nurse. M. CHRISTINE LIVINGSTON.
The Homemaker. ALBERTA CREASOR.
The Health Unit Aide. MARY DUNN.
The Volunteer. ANN COPITHORNE.
The Clerical Worker. MURIEL SMALL.

THURSDAY, 9.00 a.m.

NUTRITION AND DENTAL PUBLIC HEALTH SECTIONS

Salon B, Hotel Devonshire.

Presiding: C. W. B. McPHAIL, M.S.D.

9.00 a.m.—How are we going to get at the Sugar Problem? ESTHER L. WILKINS.
10.15 a.m.—Intermission: VISIT TO EXHIBITS.

THURSDAY, 9.00 a.m.

VITAL AND HEALTH STATISTICS SECTION

Salon E, Hotel Vancouver.

Presiding: A. E. SCOTT, B.A.

9.00 a.m.—A Century of Population Growth in B.C. J. T. MARSHALL, F.A.P.H.A.
Discussant: J. A. TAYLOR, M.D.
Measurement of Morbidity in Industry. R. KOHN, Ph.D.
10.15 a.m.—Intermission: VISIT TO EXHIBITS.

THURSDAY, 9.00 a.m.

HEALTH EDUCATION SECTION

Salon D, Hotel Vancouver.

9.00 a.m.—Sub-group discussion of topics presented during second sectional meeting.
11.30 a.m.—Concluding Remarks, Salon D.

THURSDAY, 10.30 a.m.

VITAL AND HEALTH STATISTICS AND DENTAL PUBLIC HEALTH SECTIONS

Salon E, Hotel Vancouver.

Presiding: JOHN DOUGHTY, M.A.
Symposium: **B.C. DENTAL HEALTH SURVEYS—1956–1958.**
Statistical Techniques. G. W. WHEATLEY, B.A.
Results and Applications. C. W. B. McPHAIL, M.S.D.
Criticism and Appraisal.
Statistical Aspects.
Public Health Aspects. H. K. BROWN, D.D.S.

THURSDAY, 10.30 a.m.

NUTRITION SECTION

Salon B, Hotel Devonshire

10.30 a.m.—Business Meeting—Food and Nutrition Section, American Public Health Association.
Business Meeting—Nutrition Section, Canadian Public Health Association.

THURSDAY, 10.45 a.m.

EPIDEMIOLOGY, HEALTH OFFICERS AND VETERINARY PUBLIC HEALTH SECTIONS

Salon M, Hotel Vancouver.

Presiding: R. T. RAVENHOLT, M.D.

10.45 a.m.—Current Problems of Animal Diseases Transmitted to Man—Ornithosis and Rabies. E. W. R. BEST, M.D., E. J. BOWMER, M.D., R. J. AVERY, D.V.M.

THURSDAY, 10.45 a.m.

LABORATORY SECTION

Connaught Room, Hotel Georgia.

Presiding: CHARLES F. PAIT, M.D.

STAPHYLOCOCCUS INFECTIONS.

10.45 a.m.—Staphylococcus Infections in Maternity Hospital with Special Reference to Phage Typings. W. H. COCKCROFT, M.D.

The Probable Importance of Fomites in the Spread of Staphylococcal Infections in Hospital. J. C. COLBECK, M.B.

The Significance of the Antigenic and Pathogenic Properties of Staphylococcus Toxins. C. DOLMAN, M.D.

THURSDAY, 2.30 p.m.

GENERAL SESSION

Banquet Room, Hotel Vancouver.

Presiding: JULES GILBERT, M.D.

PUBLIC HEALTH PROBLEMS OF CURRENT INTEREST.

2.30 p.m.—Some Unmet Needs in the Field of Infant and Preschool Care. J. F. McCREARY, M.D.

3.00 p.m.—Recent Advances in Virology of Public Health Interest. A. J. RHODES, M.D.

3.30 p.m.—Public Health and the Hospital Insurance and Diagnostic Services Program. K. C. CHARRON, M.D.

4.00 p.m.—Notification of Infectious Diseases and the Supervision and Control of Contacts and Carriers. HUGH PAUL, M.D.

4.30 p.m.—Business Meeting, Canadian Public Health Association, Banquet Room, Hotel Vancouver.

Business Meeting, Western Branch, American Public Health Association, Salon A, Hotel Vancouver.

THURSDAY, 6.30 p.m.

6.30 p.m.—Hospitality Hour. H.M.C.S. *Discovery*, Stanley Park.

7.30 p.m.—Barbeque Salmon Buffet and Entertainment. H.M.C.S. *Discovery*, Stanley Park.

FRIDAY, MAY 23, 8.00 a.m.

8.00 a.m.—Breakfast. Executive and Regional Board Meeting (Western Branch, A.P.H.A.) Salon B, Hotel Vancouver

NEWS NOTES

International

Yale University Summer School of Alcohol Studies will be held from June 29 to July 24, 1958. This is the sixteenth annual session. Lectures and seminars will be provided under the direction of specialists drawn from the social sciences, medicine, and psychiatry, religion, education and public health. Workshops will be held for physicians, case workers, psychologists, clergy, educators, probation, parole and correctional officers, personnel directors, and supervisors in industry and community leaders.

The Executive Board of the American Public Health Association has announced the date of the 1959 meeting which will be held October 19–23 in Convention Hall, Atlantic City, N.J. The 1958 meeting will be held in St. Louis, Mo., October 27–31.

Dr. M. G. Candau, Director-General of the World Health Organization, will personally attend the combined meeting of the Canadian Public Health Association, its B.C. Branch and the Western Branch of the American Public Health Association in Vancouver May 20 to 22, 1958. Dr. Candau will address a general session on the subject of "The Program of the World Health Organization in Retrospect and Prospect." Dr. Candau's attendance at the Canadian Public Health Association meeting will precede the Tenth Anniversary Commemorative Session of the World Health Organization to be held in Minneapolis, Minnesota, on May 26 and 27. This will be followed by the Eleventh World Health Assembly extending over the succeeding three weeks. Representatives from most of the 84 member nations and four associate members will be in attendance at this, the first meeting of the Assembly to be held in the United States. A special committee in Minneapolis is planning an extensive program of visits and entertainment for the delegates to the Assembly both during and after the meeting.

Federal

The first Dominion-provincial agreement under the Hospital Insurance and Diagnostic Services Act was concluded in Ottawa on March 3 with the province of Ontario. The agreement was signed by Hon. J. Waldo Monteith, minister of National Health and Welfare, and Hon. Leslie M. Frost, premier and provincial treasurer for Ontario. It is expected that the Ontario hospital insurance program will begin to operate January 1, 1959.

A record number of babies were born in Canada during 1957. The national rate last year was 28.6 compared to 28.9 in 1947, and represented a sudden rise following two successive declines in 1955 and 1956.

Deaths in Canada in 1957 totalled an estimated 138,800, raising the national death rate to 8.4 from record low rates of 8.2 during the previous three years.

The week April 28–May 4 has been designated by the Canadian Mental Health Association as National Mental Health Week. During the week the Association will conduct a campaign for membership and funds centered in the words "The Mentally Ill Need Your Help".

Dr. P. E. Moore, Director of Indian and Northern Health Services, Department of National Health and Welfare, Canada's designated member of the World Health Organization Executive Board, accompanied by Dr. B. D. B. Layton, Head of the International Health Section of that Department, as Dr. Moore's alternate, attended the twenty-first session of the Board in Geneva, extending from January 7 to 29. The Executive Board is composed of 18 persons designated by member countries elected by the World Health Assembly. Board members, although designated by governments, do not represent these governments, but serve in an individual capacity. The twenty-first session concluded the second year of a three-year term for which Canada may designate a member. Dr. Moore was also a member of the Standing Committee on Administration and Finance, a sub-committee of the Executive Board as well as a Co-Chairman of the Board. At the conclusion of the sessions, Dr. Moore and Sir John Charles, designated by the United Kingdom, were chosen to represent the Executive Board at the 11th World Health Assembly in Minneapolis, U.S.A.

Kingsley Kay, Ph.D., chief, occupational health laboratory, Department of National Health and Welfare, headed the Canadian delegation to the fifth meeting of the chemical industries committee of the International

Labour Organization in Geneva, Switzerland, from February 10 to 21. The Canadian delegation included representatives of government, workers and employers.

Bruce McKenzie, M.S.W., consultant in medical social work, medical rehabilitation and disability advisory services, and Miss Jean Dorgan, M.S.W., consultant in social work, mental health division, Department of National Health and Welfare, recently attended the sixth annual meeting of the Council on Social Work Education in Detroit, Mich. Mr. McKenzie took part in a panel discussion on the training of social workers for rehabilitation and Miss Dorgan participated in a panel on the accomplishments and problems of training grant programs.

Charles Farmilo, Ph.D., organic chemistry section, Food and Drug Directorate, Department of National Health and Welfare, attended a meeting of the export committee on addiction-producing drugs convened by the World Health Organization in Geneva, Switzerland, in February.

British Columbia

Plebiscites were held at the civic elections in December and January on fluoridation of water in Vancouver, Nanaimo, North Vancouver, Richmond and other cities. In Vancouver the vote supported fluoridation by a definite, though not a large majority. It was defeated in Nanaimo, North Vancouver and Richmond which are part of the Greater Vancouver area. Burnaby and West Vancouver have not yet voted. Before Vancouver can introduce fluoridation a definite majority in all the municipalities supplied by Vancouver with water must agree to accept it.

Dr. Stewart Murray, Senior Medical Health Officer of Vancouver has recommended that children under the age of 15 in Greater Vancouver receive tuberculin tests instead of miniature radiographs. This action is in accord with the accepted view that it is desirable to avoid radiation exposure in children.

Treatment used by the Hoxsey Clinic in Dallas, Texas, to cure cancer was investigated by a six-member committee appointed by the Provincial Government with the Departments of Education and Health. This Committee consisted of Dr. J. M. Mather, Head of the Department of Public Health at U.B.C.; Dr. A. W. Carruthers, Associate Professor of the Law Faculty; Neil Harlow, University Librarian; Professor S. A. Jennings, Department of Mathematics; G. E. Saxton, M.D., Clinical Instructor in Surgery; and Professor H. E. Taylor, Department of Pathology. Following a thorough study and visit to the Hoxsey Clinic, they reported that the treatment was valueless. The sixty-page report is most comprehensive.

Alberta

In the provision of province-wide diagnostic services in hospitals, the Department of Public Health is providing substantial quantities of new equipment, arranging for the exchange of X-ray apparatus among a number of hospitals and planning the most effective distribution of diagnostic services. A grant of $400,000 has been made from the National Health Grants to assist the province in its plan to raise the standards of laboratory and X-ray equipment in 63 Alberta hospitals.

Saskatchewan

Dr. James D. Ramsay has been appointed director of the research and statistics branch of the Saskatchewan Department of Public Health. Dr. Ramsay fills the vacancy left by Dr. Murray Acker who is on leave of absence from the department. Dr. Ramsay received his medical training at St. Andrew's University and graduated in 1942. He immediately joined the Royal Medical Corps and served in the Middle East, Italy and Europe. On his discharge from the British army, Dr. Ramsay took the diploma course in public health, qualifying in 1948. He held several public health posts in Scotland before his recent arrival in Canada.

Charles H. Jackson, M.A., Ph.D., lately of Portsmouth, England, has been appointed teacher-psychologist on the staff of the North Battleford Health Region, filling a post that has been vacant for some time. Dr. Jackson is a native of Dublin, Ireland, and a graduate of Trinity College. Dr. Jackson has held a number of teaching posts in elementary and high schools and served for five years with the educational service of the Royal Air Force. He has since engaged in clinical and educational psychology in London and directed child guidance work in various parts of the United Kingdom.

Manitoba

The city of Winnipeg will receive federal assistance of $7,500 to extend its dental services for the care of children. The federal grant will be used to equip a dental clinic in one of the city schools.

Manitoba's new dental college will be ready to enrol its first class of students at the beginning of the 1958–59 academic year. Following a survey and report by Dr. J. K. Paynter of the University of Toronto, the government approved of the construction of

a new college building and the establishing of a faculty. The school will be capable of graduating 30 dentists a year and of graduating also 15 dental hygienists. The capital cost of the building and equipment is estimated at $1,350,000 and a four-year course is proposed. Dr. J. W. Neilson, Associate Professor, School of Dentistry, University of Washington, has been appointed Dean of the new school.

Manitoba Children's Dental Health Week, sponsored jointly by the Manitoba Dental Association and the Provincial Government, was held April 12–19. Elaborate plans were made for publicity and education on a province wide basis. A play on Dental Health was distributed to schools throughout Manitoba and one class was chosen from a Winnipeg School to present the play on T.V. T.V. and radio coverage was arranged and the symbol of Dental Health Week, a colourful character called Danny the Dental Elf, was seen on posters, placemats, newspaper advertising and T.V. The importance of good dental health was stressed with special emphasis on the preventive rather than the curative aspect.

Ontario

Ontario will double its capital construction grants to hospitals at a cost of about $3,000,000 this year. The increased grants match similar federal increases which have been announced and which will bring the provincial expenditures for this purpose to more than $6,500,000 in 1958. The main increase is for active treatment beds. The allowance for these is $2,000 per bed compared with the previous grant of $1,000 per bed. A new classification for Ontario is that of internes' beds. The province will grant $2,000 a bed in addition to Ottawa's contribution of $750. Chronic and convalescent beds will receive $2,000 to $3,999, nursery bassinettes $333 to $666, nurses' beds, $1,000 to $2,000, T.B. beds $2,500 to $3,000. The grant will be raised from $1,000 to $2,000 for space for emergency and out-patient services and for diagnosis and treatment.

Ontario's civil service staff increased by 1,850 last year to make a total of 22,950. The average civil service salary is now $3,600. In 1949 the average was $2,312. Contrary to the widely accepted view that staff turnover is high in the civil service, the figure for the permanent staff was less than 6% and was 15.3% for permanent and temporary staff combined.

Following the holding of the First Ontario Conference on Aging last spring, a new organization has been established—the Ontario Society on Aging. The objects are to stimulate public awareness and interest, to establish a center which will provide advisory, consultant and referral services and to obtain financial support to carry out the objects of the corporation. Copies of the report of the First Conference are now available at $2.00 per copy from 65 St. George St., Toronto 5, Ontario.

School of Hygiene, University of Toronto

A Refresher Course in Public Health and Preventive Medicine was held in the School of Hygiene, University of Toronto, February 10–12, 1958. The course was organized in collaboration with the Division of Postgraduate Medical Education of the Faculty of Medicine. The course was attended by approximately 70 physicians in public health work and by some general practitioners.

The following topics were covered: Mental hygiene in school children; Nutritional problems in the aged; Effects of radiation on man; Mortality from cancer; Perinatal mortality; The care of the chronically ill, home care of the sick, rehabilitation, accidents and poisonings; Staphylococcal and other cross infections; Preventive dentistry; Cancer research; Food preservation; Nutrition and coronary heart disease; New industrial hazards; Prepaid medical care; Bacterial and parasitic infections of children; Virus infections.

The physicians attending the course included Officers of the Department of National Health and Welfare; Officers from the Provincial Departments of Health; Medical Officers of Health and representatives of the Armed Forces.

New Brunswick

Dr. R. J. Collins, Superintendent of the Saint John Tuberculosis Sanatorium retired last fall. He had been superintendent for 28 years serving previously at the Nova Scotia sanatorium at Kentville and also for 7 years at Jordan Memorial Sanatorium. Dr. Collins has been a leader in tuberculosis work, not only in New Brunswick, but throughout the Atlantic provinces. He was past president of the Canadian Tuberculosis Association and he took an active part in the national Anti-Tuberculosis Program. Tributes of appreciation were paid to Dr. Collins by Mr. Frank G. Wilson, chairman of the board and by members of the staff. Dr. Lachlan Macpherson, succeeded Dr. Collins as superintendent.

Dr. Arnold Branch of Rothesay was appointed president of the Canadian Association of Pathologists. Dr. Branch is chief of the laboratory services at Lancaster D.V.A. Hospital, and is also provincial medical director

for the Red Cross Blood Transfusion Services.

The Forest Hill Rehabilitation Centre in Fredericton is now completed and is going into immediate operation. The Centre will serve the handicapped of New Brunswick who are referred through the Rehabilitation Division of the Department of Health.

The Centre will accommodate twenty in-patients and can provide services for as many or more out-patients at any one time. It is not planned that the Centre will provide medical rehabilitation but will stress physical and occupational therapy. Financial assistance has been provided in the construction of the Centre through government grants as well as contributions of business firms and service clubs in the Province.

Cost of treatment will be borne by agencies referring patients for treatment including the Department of Health, Workmen's Compensation Board and the Polio Foundation.

Dr. A. R. F. Adams, formerly of Moncton Tuberculosis Hospital, has been appointed Acting Superintendent, Jordan Memorial Sanatorium, The Glades, N.B. Dr. Adams replaced Dr. R. F. LeBlanc, who accepted the appointment of Medical Superintendent at Notre Dame de Lourdes Sanatorium, Vallee Lourdes, N.B.

Following six years of field work in maternal and child health with the World Health Organization in Burma and Ceylon, Miss Lillian Baird has been appointed public health nursing field supervisor. Miss Baird will work under the supervision of Miss Muriel Hunter, Director of Public Health Nursing, and replaces Miss Lois Smith who last year became Director of Nursing at the Provincial Hospital, Lancaster. Miss Baird is a graduate of the Montreal General Hospital.

Alwyn J. Cameron, Provincial Sanitary Engineer attended an advanced course for Sanitary Engineers in Water Supply and Water Pollution held at the Robert A. Taft Sanitary Engineering Centre in Cincinnati, Ohio, from March 3–14, 1958.

Mr. John Arsenault, Tuberculosis Survey Director with the N.B. Tuberculosis Association, stated that between 10,000 and 12,000 chest X-rays may be taken between February 24 and April 24 in the Moncton area in a regular mobile van survey. The survey, being conducted jointly by the Tuberculosis Association and the New Brunswick Department of Health, will include employees of the T. Eaton Co. and the C.N.R. as well as the general public. In addition, the sanitary inspectors of the Moncton Board of Health Office, Aldore LeBlanc and William Foster will arrange with food handling establishments to have their employees X-rayed during the survey. The Moncton Corps of the St. John Ambulance Brigade will assist in the recording and other necessary procedures.

Nova Scotia

Dr. J. J. Stanton, C.M. D.P.H., who formerly held the position of divisional medical health officer for the Northumberland Division of the Department of Public Health with headquarters at Pictou, N.S., has been transferred to the central office of the Department of Public Health as Director, Division of Health Grants.

An institute will be sponsored by the Dalhousie School of Nursing on "Nursing Aspects in a Cancer Program".

Mrs. Maria Parker, formerly of Saskatchewan, has joined our Public Health Nursing staff, with headquarters at Dartmouth.

Mrs. Vera Wasson, Public Health Nurse, Shubenacadie and Mrs. Marie Chisholm, Public Health Nurse, Antigonish, have resigned from our staff.

Mrs. Helen MacKeigan, Public Health Nurse, has rejoined our staff, with headquarters in New Waterford.

Miss Kathleen Bird, Public Health Nurse, Guysborough, has been transferred to Antigonish.

Prince Edward Island

Miss Mona Wilson, President of the New Brunswick-Prince Edward Island branch of the Canadian Public Health Association, has announced that the annual meeting of the branch will be held this year in Charlottetown on Thursday, April 24. Dr. R. S. Langstroth, Provincial Director of Dental Public Health for New Brunswick, is Chairman of the Program Committee.

Excellent response to the current Island-wide tuberculin testing program is being noted in Summerside. Summerside, second in size only to Charlottetown in the province, will continue having clinics for a five week period. Dr. E. M. Found and Miss Hannah Turner, P.H.N., are in charge of the clinics. Garth C. Crockett, Health Educator is responsible for the organization.

Free Salk Polio Vaccine is being distributed this month to all physicians and the P.E.I. Polio Foundation upon request for inoculation of the 19–40 age group. Due to insufficient staff, the Health Department felt it was unwise to attempt to carry on a program that would include this age group at this time. The clinics are organized by the Polio Foundation with private practitioners generally in charge. There is a fee for administration etc.

Books and Reports

TUBERCULOSIS – EVERY PHYSICIAN'S PROBLEM. J. Arthur Myers, M.D. Charles C. Thomas, Publisher, Springfield, Illinois. In Canada, Ryerson Press, Toronto. 1957. 290 pp. $8.25.

This is a modern approach to the problem of tuberculosis, written expressly for the practising physician. It consists of three parts: the first deals with the tubercle bacillus and its initial invasion, followed by an outline of the clinical forms of tuberculosis and concludes with what used to be called control but with "the forward look" is called eradication. It is written in a most stimulating fashion; for instance, nobody is left in doubt as to the author's concept on the reinfection type of tuberculosis as to whether it is endogenous or exogenous in origin. Further, there is no doubt of the author's concept of the value or future of the "dozens of preparations offered in the past 70 years" for the prevention of tuberculosis. He concludes with a vigorous discussion of anachronisms, "practices carried on now because they have been in use for the past 30 years even though they are of little value". The work is presented in an attractive style and well illustrated.

PRACTICAL NURSING TODAY, Elisabeth C. Phillips, Margaret C. Esau, Eleanor A. Tourtillott, Kathryn Goodman Frenzos, Barbara R. Fallon. Edited by Cordelia W. Kelly, G. Putnam's Sons, New York, 1957. Published in Canada by McAinsh and Co. Ltd., Toronto. 527 pp. $5.95.

The five authors have collaborated very successfully in preparing a book for practical nurses caring for patients at home or in hospital. The authors are educators who have had extensive teaching experience in schools of practical nursing. The content is presented under five main headings representing major areas of interest common to both education and to service. *Part I* is concerned with the practical nurse herself. Information about education programs, licensing, nursing organizations and publications and work opportunities. *Part II* is entitled "The normal body and how to keep well". The nine systems in the human body are described providing a satisfactory background (emphasis placed on body hygiene and nutrition for the well person). In *Part III* the growth and development of an individual from birth to death is discussed in detail. The acute and long-term illnesses are outlined in *Part IV* and in *Part V* entitled "Nursing arts" various topics are presented including the patient's environment in home and hospital, special nursing procedures, obtaining specimens for laboratory tests, etc.

The text reflects the fundamental knowledge, skills and attitudes which go to make up good nursing care. A glossary of terms appears in the appendix. Those responsible for courses of instruction for practical nurses will welcome this book as being comprehensive, reliable and thoroughly up-to-date.

INDUSTRIAL FIRST AID. C. R. Salsbury, M.D.C.M., E.D., F.R.C.S. (C), F.R.C.S. (Eng.) Ryerson Press, Toronto, 1957, 403 pp. $3.00.

This is the second edition of this text on industrial first aid. It was the feeling of the author that a more comprehensive presentation was necessary than is supplied in the usual first aid books. In the second edition the author has gone even further in his inclusion of explanatory background and in the presentation of conditions which are not included in first aid work. One object of this book is to supply a guide for the more prolonged treatment of those casualties for whom the ideal of immediate medical attention is unobtainable. The author has been cognizant of the needs of remote settlements and logging camps where a physician is not readily available, therefore, a few definitely surgical procedures have been described which would be performed only when circumstances of time and place necessitated.

The content of the book has been approved by the British Columbia Division of the Canadian Medical Association and Dr. Salsbury has met a very definite need in preparing this thoroughly up-to-date text. The book is a Canadian contribution to a need in many countries.

CLOSED RANKS: An Experiment in Mental Health Education. Elaine Cumming, Ph.D. and John Cumming, M.D. Published for the Commonwealth Fund by Harvard University Press. Distributed in Canada by S. J. R. Saunders and Co., Toronto. 1957, 192 pp. $3.85.

The experiment in mental health education here reported represented a concentrated effort to change attitudes towards mental illness and the mentally ill in a single community. The original study was made in 1951 and it is of particular interest that it was made in a prairie province in Canada. Two small communities were selected, one being used as a "control", the other observed before and after the mental health program. The authors note that although there was a considerable difference in toleration toward the mentally ill among the varying segments of the population, the mental health education program had virtually no effect on the degree of toleration. In a foreword, Dr. John A. Clausen reviews the program followed and states: "The Cummings have courageously attempted to find out why their initial goals were not achieved. In doing so, they have produced what is perhaps the most thorough evaluation of a mental health educational program yet achieved".

Health educators, and particularly mental health educators, will profit by the experience recorded and be stimulated by the formulations and suggestions which the authors present as a basic hypothesis concerning the nature of social response to the topic of mental illness.

THE DIAGNOSIS AND TREATMENT OF PULMONARY TUBERCULOSIS. Paul Dufault, M.D., with a chapter on Pathology by A. Reynolds Crane, M.D., and a chapter on Pulmonary Function by Oscar Feinsilver, M.D. Second Edition. Published by Lea & Febiger, Philadelphia, 1957, 426 pp. $9.00.

Although this is a second edition it is practically a new text replacing the original text by Stone and Dufault since the management of clinical tuberculosis has changed so radically with the advent of modern drugs. Dr. Feinsilver's chapter on the evaluation of pulmonary function and Dr. Crane's chapter on basic pathology with well-chosen illustrations are very helpful additions. The text has been prepared not only for physicians but also for all who are interested in medical and social aspects of tuberculosis. It is concise, complete, and thoroughly up-to-date.

PARTICULATE CLOUDS: DUSTS, SMOKES AND MISTS, by H. L. Green, M.A. (Cantab.), F.Inst.P., and W. R. Lane, B.Sc. (Birm.), F.Inst.P. Published by E. & F. N. Spon Ltd., London, England, 1957. McClelland & Stewart Limited, Toronto, Canada. 425 pp., $14.00.

In a Foreword to this book, Sir Harold Hartley draws attention to the fundamental work on dusts which has been conducted at the Chemical Warfare Experimental Station at Porton, England. Among the members of the Physics Department there have been the authors of this book. The authors discuss from a mathematical and physical standpoint the problems concerned with the generation, stability, movement, measurement and sampling of clouds, dusts, smokes and mists. Slightly more than half the book is concerned with these fundamental mathematical and physical considerations.

The second part of the volume deals with industrial and environmental aspects. The work includes reference to health hazards of atmospheric pollution with special reference to the importance of particle size and methods of sampling the atmosphere and determining size. Other sections deal with the effects of clouds, fogs and mists produced in nature and their importance in the field of aviation from the standpoint of visibility and the icing of aircraft. The importance of these principles is clearly illustrated when reviewing the factors involved in the selection of particle size for an aerosol to be used therapeutically by inhalation. The authors point out that the selection of size will be determined by the area of the respiratory system in which treatment is desired. Then they comment on methods which may be used to generate particles of the size desired. The volume also deals with dusts and sprays used so extensively in agriculture.

In the opinion of the authors, release of particulate matter into the atmosphere at large has created one of the most acute environmental problems of the day. Their review of this subject includes a consideration of formulae which may be used in specifying chimney heights which are desirable from the standpoint of decreasing pollution of the atmosphere.